CE 592 (3 Credits): Global Construction Engineering and Management Practices

SPRING 2016

INSTRUCTOR (1): Dr. Edward J. Jaselskis, P.E., Ph.D.
Professor, Department of Civil, Construction & Environmental Engineering
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TEACHING ASST: Rabia Omer
222 Mann Hall
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MEETINGS: Mondays or Fridays 8-10 am EST (note that most lectures will be on Monday and the actual in-class time will be between 1.5-2 hours due to the use of pre-recorded lecture material).

LOCATION: 327 Daniels Hall

OFFICE HOURS: Monday and Wednesday from 3-4 PM, or by appointment.

IIT-MADRAS, TIANJIN AND TSINGHUA UNIVERSITY STUDENTS:

- **Supplementary Materials (e.g., additional readings, assignments, and discussion questions):** Each participating university will manage a separate web page for this course. However, all supplementary articles and presentation materials can be found at the following website (no Username or Password required):
  
  https://courses.ncsu.edu/ce592/lec/601/

- **Recorded and Pre-recorded Lectures:** A special link will be provided for you to access the pre-recorded lectures. All recorded lectures for the current Spring 2016 semester and past lectures (Spring 2013 and Fall 2014) can be found at the following website:

  https://coe.online.ncsu.edu/online/Catalog/Full/ef727aaf4c36453889d4bcd6ae8673521

  - Note that you will need to use the appropriate Username and Password for access to these recordings—*please obtain your valid Username and Password from your instructor.*

- **Piazza,** a discussion forum, will be available to students from ALL participating universities. Piazza is a full-featured discussion forum that will be used for students to post questions and receive answers. Students will receive an email

1. Please see Appendix A for a listing of the other instructors for this course.
NCSU STUDENTS: The following URLs allow NC STATE students to access different components of the course:

- **Moodle learning management system (NC STATE)**
  - Log into Moodle at: [http://wolfware.ncsu.edu](http://wolfware.ncsu.edu) and find the link for CE 592-001, 601 course site. Students who are new to the Moodle learning management system should complete the tutorial at: [http://go.ncsu.edu/learningwithmoodle](http://go.ncsu.edu/learningwithmoodle).

- **Recorded and Pre-recorded Lectures**
  - All recorded lectures for the current Spring 2016 semester and past lectures (Spring 2013 and Fall 2014) can be found at the following website: [https://coe.online.ncsu.edu/online/Catalog/Full/ef727aaf4c364539889d4bcd6ae8673521](https://coe.online.ncsu.edu/online/Catalog/Full/ef727aaf4c364539889d4bcd6ae8673521).
    - Note that you will need to use your personal Username and Password for access to the recordings.

- **Supplementary Reading and Presentation Materials**
  - All supplementary readings and presentation materials can be found at the following website (no Username or Password required): [https://courses.ncsu.edu/ce592/lec/601/](https://courses.ncsu.edu/ce592/lec/601/)

- **Piazza**, a discussion forum, will be available to students from ALL participating universities. Piazza is a full-featured discussion forum that will be used for students to post questions and receive answers [includes NC STATE, IIT-Madras, Tianjin, and Tsinghua].
  - Students will receive an email invitation from Piazza.com with information on how to connect to the Piazza site. NC STATE students will be provided a direct link to Piazza from within the Moodle course site. NC STATE students can contact the TA with questions regarding access to Piazza.
  - Link: To Be Provided Later

**COURSE BACKGROUND**

*Construction is truly a global business.* It is common to find that design is simultaneously performed in different countries (24/7 design); material is procured from sources around the globe; and construction is performed by a workforce that is multicultural, multilingual, and multinational. Because of these characteristics those involved with this profession need to embrace this reality and become more aware of the various design and construction practices found throughout the world. This course provides students with such a global awareness by revealing construction practices and innovations found in different countries—both developed and emerging. To introduce this global awareness, unique construction perspectives will be offered by a consortium of universities located in China (Tsinghua and Tianjin), India (IIT-Madras), and the U.S. (North Carolina State University).
lecturers will present practices found in other parts of the world including Panama, Europe, Africa, and the Middle East. See Appendix A for the biographies of the course organizers.

COURSE CONTENT

This course includes a series of guest lectures, student presentations on construction practices found in their respective countries, and a collaborative term project. Guest speakers include industry practitioners and academics speaking on topics such as global construction challenges, procurement issues, legal aspects, international finance and public private partnerships, leadership, industry best practices, and productivity enhancement techniques.

TEXT

The primary text book for this class is Global Engineering and Construction, by Dr. J. K. Yates, John Wiley & Sons, Inc., 2007 (GE&C). ISBN: 471743828. Other readings are included in e-Reserves and will not need to be purchased.

COURSE OBJECTIVES

• Describe the differences and challenges of constructing projects in other countries
• Apply principles of contracting and legal issues in a global setting
• Debate various techniques for financing international projects such as through public private partnerships
• Collaborate on a multinational team to solve a construction problem

CAPTURED LECTURES

• This on campus course will be captured and distributed via the Internet and/or electronic media as part of the Engineering Online (EOL) program for the distance students. These video recordings may contain an image of you entering the classroom, asking a question or being a part of the studio class. Please notify Dr. Linda Krute, Director of EOL, in writing at ldkrute@ncsu.edu if you DO NOT want your image to be included in the lecture presentation. If we do not hear from you after the first week of the class, we will assume that you are in agreement with this procedure.

SCHEDULE/READINGS

A detailed schedule with reading assignments and pre-recorded presentation for the NC STATE students is as follows:

<table>
<thead>
<tr>
<th>Lecture/Session</th>
<th>Date</th>
<th>Topic (see Appendix B: Speaker Biographies)</th>
<th>Readings (see detailed Reading list in Appendix C)</th>
<th>Pre-recorded Lectures (1)</th>
</tr>
</thead>
</table>
| 1               | January 8, 2016 (Friday) | • Overview of course and introduce partner institutions(Jaselskis/Kalindi/Zhang/Liu/Guo)  
• Course outline & agenda (Jaselskis)  
• Review Assignment #1 (Jaselskis) | • Chapters 1 and 13 (GE&C)                                                                                     | Dr. A. Ramakrishna (~32 minutes)                          |
<table>
<thead>
<tr>
<th>Date</th>
<th>Challenges of constructing projects in a global environment—Mike Gwyn (Leidos)</th>
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<tbody>
<tr>
<td>January 22, 2016</td>
<td>• Global legal issues for engineers and constructors (Mike Loulakis—call-in)</td>
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<td></td>
<td>• NC STATE leads discussion questions</td>
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<td></td>
<td>• Chapters 7 and 11 (GE&amp;C)</td>
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<td></td>
<td>• Additional Reading (See Appendix C)</td>
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<td></td>
<td>Dr. Pin-Chao Liao (27 minutes); Dr. Ghada Gad (30 minutes)</td>
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<td>January 29, 2016</td>
<td>• Culture, communication, conflict, and leadership (Sean Terrell [B&amp;V]</td>
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<td></td>
<td>and Lionel Randolph [Yates])</td>
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<td></td>
<td>• IIT-Madras leads discussion questions</td>
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<td></td>
<td>• Chapter 2 (GE&amp;C)</td>
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<td></td>
<td>• Additional Reading (See Appendix C)</td>
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<td></td>
<td>Dr. Avi Wiczel (~60 minutes); Dr. Mahalingam (~58 minutes)</td>
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<td>February 1, 2016</td>
<td>• Managing global engineering and construction projects—Chris Reseigh</td>
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<td>• NC STATE leads discussion questions</td>
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<td>• Discuss Independent Report</td>
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<td></td>
<td>• Chapter 3 (GE&amp;C)</td>
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<td></td>
<td>Mike Bellamy and Mike Carrancho (~90 minutes)</td>
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<tr>
<td>February 8, 2016</td>
<td>• Global construction financial techniques (Dr. A. Thillai Rajan)</td>
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<td></td>
<td>• IIT-Madras leads discussion questions</td>
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<td></td>
<td>• Chapters 5 &amp; 6 (GE&amp;C)</td>
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<tr>
<td></td>
<td>Dr. Shouqing Wang (41 minutes); Harry Sambell (66 minutes)</td>
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<tr>
<td>February 15, 2016</td>
<td>• Global productivity issues (Dr. Koshy Varghese)</td>
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<td></td>
<td>• NC STATE leads discussion questions</td>
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<td></td>
<td>• Chapter 10 (GE&amp;C)</td>
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<td></td>
<td>Dr. Greg Howell (60 minutes)</td>
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<tr>
<td>February 22, 2016</td>
<td>• Bidding considerations in other countries (Bob Prieto)</td>
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<td></td>
<td>• Discuss Term Project (Jaselskis)</td>
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<td></td>
<td>• Chapter 8 (GE&amp;C)</td>
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<td></td>
<td>• Additional Reading (see Appendix C)</td>
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<td></td>
<td>Dr. Fang Dongping (48 minutes); China World Expo Project (Dr. Daniel He, Tongji University)</td>
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<td>February 29, 2016</td>
<td>• Construction Practices in the United States (Dr. Jaselskis and students from NC State)</td>
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<td>• Chapter 14 (North America) (GE&amp;C)</td>
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<td>March 14, 2016</td>
<td>• Construction Practices in India (Dr. Kalidindi and students from IITM)</td>
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<td>• None</td>
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<td>March 21, 2016</td>
<td>• Construction Practices in China (Drs. Zhang/Liu and students from Tianjin University; Dr. Guo and students from Tsinghua University)</td>
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<td>• Chapter 14 (Asia) (GE&amp;C)</td>
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<td>Dr. Tserng/Steven Huang (60 minutes)</td>
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<td>March 28, 2016</td>
<td>• Construction Practices in Germany, Panama and UK—Dr. Hans Alfen—Bauhaus Universitat Weimar</td>
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<td>• Chapter 14 (South America and Eastern and Western Europe) (GE&amp;C)</td>
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<td></td>
<td>Panama (Dr. Roldolfo Valdez-Vasquez); Ireland/UK</td>
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<td>Date</td>
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<td>April 4, 2016 (Monday)</td>
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<td>April 18, 2016 (Monday)</td>
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<td>April 25, 2016 (Monday)</td>
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Pre-Recorded Presentation Information (to be viewed before class) (See Notes 1 and 2)

**Lecture 1:** Dr. Ramakrishna (~32 minutes), Challenges of Constructing Projects in a Global Environment. Mediasite recording, CE 592 Archive, Lecture 1, Spring 2013 (Time: 0:38:56 to 1:12:30).

**Lecture 2:** Dr. Pin-Chao Liao (~27 minutes), The Chinese Construction Market: Legal Issues, Mediasite recording, CE 592 Archive, Lecture 2, Spring 2013 (Time: 0:3:53 to 0:32:40). Dr. Ghada Gad (~30 minutes), Effect of Culture on Selection of Dispute Resolution Methods in International Construction Contracts, Mediasite recording, CE 592 Archive, Lecture 4, Spring 2013 (Time: 1:34:03 to 2:20:00).


**Lecture 4:** Mike Bellamy and Mike Carrancho (~90 minutes), Overseas Construction, Mediasite recording, CE 592 Archive, Lecture 9, Spring 2013 (Time: 0:5:33 to 1:54:55).

**Lecture 5:** Dr. Shouqing Wang (41 minutes 50 seconds), Developing Infrastructure via Project Finance (BOT/PFI/PPP). Mediasite recording, CE 592 Archive, Lecture 6, Fall 2014 (Time: entire video). Harry Sambell (Pt. 1, 2, and 3), Financing Capital Projects. Mediasite recording, CE 592 Archive, Lecture 6, Fall 2014 (Time: approximately 1 hour 15 minutes).

**Lecture 6:** Dr. Greg Howell (~60 minutes), What is this Thing called Lean?, Mediasite recording, CE 592 Archive, Lecture 5, Spring 2013 (Time: 0:50:20 to 2:25:14).

**Lecture 7:** Dr. Dongping Fang (~48 minutes), Constructio Safety & Health – A world wide challenge, Mediasite recording, CE 592 Archive, Lecture 3, Spring 2013 (Time: 2:08:14 to 2:55:00). Dr. Daniel He (~60 minutes)-- China World Expo and other projects, Mediasite recording, CE 592 Archive, Lecture 13, Fall 2014 (Time: 3:26 to 1:07:49).

**Lecture 8:** no pre-recorded material

**Lecture 9:** no pre-recorded material
Lecture 10: Dr. Tserng and Steven Huang (~60 minutes), Construction Practices in Chinese Taipei, Mediasite recording, CE 592 Archive, Lecture 14, Spring 2013 (Time: 1:58:00 to 3:04:05).

Lecture 11: Watch Panama and Ireland from Mediasite

Lecture 12: Students at the University of Calgary (~105 minutes), Engineering and Construction in Canada, Mediasite recording, CE 592 Archive, Lecture 8, Spring 2013 (Time: 0:3:15 to 1:45:50).


Lecture 14: no pre-recorded material

Lecture 15: no pre-recorded material

Note 1: Please see the following website for access to recording for Spring 2013 and Fall 2014: https://coe.online.ncsu.edu/online/Catalog/Full/ef727aaaf4c364539889d4bcd6ae8673521

If you are not an NC STATE student, your instructor will need to provide you with a Username and Password in order to have access to these recordings.

Note 2: A pdf version for most presentations are available as the slides in the Mediasite recording are difficult to read. See the following website for these slides: https://courses.ncsu.edu/ce592/lec/601/
EXAMINATIONS

There will be no examinations for this course only project assignments.

PROJECT ASSIGNMENTS

CONSTRUCTION PRACTICES AROUND THE WORLD (40%)

Students at each university will research and present the practices and innovations in their respective countries (e.g., size of industry; construction means and methods; contracting; materials, labor, and equipment issues; cultural differences, project management techniques, and technologies implemented). A standard template will be provided for the report and presentation.

INTERNATIONAL CONSTRUCTION TERM PROJECT (40%)

Students from the participating universities will have an opportunity to work together on a meaningful project and present their findings in a live session. The project will expose students to the unique challenges of working on multi-cultural and lingual teams.

Objective: To engage diverse student teams in understanding the risks related to bidding construction work in another country. Multi-university teams will need to consider economic, social, political, religious, intellectual or ideas, and technological risks on a real world project to be designed and constructed in a different country.

Methodologies for groups to operate:

- Participating universities collaborate to form a team. A team can have members from different universities, containing a maximum of 4-5 members.
- Each team will prepare a document of 10 to 15 pages and make a presentation.

Outcome of the assignment:

- Opportunity to work in multinational teams
- Gains insights on the designs, construction practices and the various issues in different countries

Evaluation:

- The teams will be evaluated by the team reports
- The team reports will be evaluated by your lead instructor

PROJECT ASSIGNMENTS (cont.)

INDEPENDENT REPORT (20%)

Goal: To explore an area related to international construction engineering and management so as to gain a deeper understanding and appreciation of this topic; this can be any topic even ones previously discussed in class. Students will be required to prepare a report (~10 pages, 12 pt font, double spaced). The reports will be due at the end of the semester (date to be determined).
APPENDIX A: LEAD ORGANIZERS

Dr. Edward J. Jaselskis
Dr. Edward Jaselskis is the E.I. Clancy Distinguished Professor in the Department of Civil, Construction, and Environmental Engineering at North Carolina State University. Dr. Jaselskis has conducted research in the areas of construction project success and advanced information technologies where his research has led to three patents and numerous publications. He has served as a program director for the National Science Foundation in the area of information technology and infrastructure systems. Dr. Jaselskis is a registered professional engineer in the State of Iowa, member of the Strategic Planning Committee for the Construction Industry Institute, member of the National Academy of Construction, and Executive Committee Member of the Global Leaders Forum for Construction Engineering and Management.

Dr. Satya Kalidindi
Dr. K. N. Satyanarayana is a Professor in the Building Technology & Construction Management Division of the Department of Civil Engineering at the Indian Institute of Technology Madras, Chennai, India. In 2009 he was a Visiting Professor at Iowa State University (USA) during which time this course was conceived. His teaching, research and consulting interests are in the areas of project management, construction contracts, quality management, construction equipment, and public private partnerships. He has published extensively in these areas. He is the recipient of many academic awards. Recently he was presented the PMI India Distinguished Scholar 2011 award. He is a board member of the Institute for Lean Construction Excellence, Vice-Chairman, Board of Advisors of The Glass Academy, and Member of the Academic Advisory Group, Project Management Institute (PMI) India.

Dr. Donghai Liu
Dr. Donghai Liu is a professor of Hydraulic Engineering and Management at School of Civil Engineering, Tianjin University. His areas of research include construction schedule, quality and risk management of hydraulic project using system simulation, optimization and advanced information technologies. He is a member of Underground Space Operation Safety Committee, China Civil Engineering Society (CCES) and also Hydraulic Engineering and Hydraulics Committee, Chinese Hydraulic Engineering Society (CHES).

Dr. Jinyue Zhang (Tianjin University)
Dr. Jinyue Zhang is an Associate Professor at the Department of Construction Management, Tianjin University. He is the Director of Tianjin University – Trimble Joint Lab for BIM (formerly Center for Integrated and Smart BIM). Dr. Jinyue Zhang’s research interest is IT application in the construction industry in general, and he has been focusing on information flow management and BIM application for more than ten years. He is the PI of several research projects funded by the National Science Foundation Council and a co-investigator in several international research projects.
Dr. Dongping Fang

Dr. Dongping FANG is a Professor and head at Dept. of Construction Management, School of Civil Engineering, Tsinghua University. He is the founding director of (Tsinghua–Gammon) Construction Safety Research Center. His research, teaching and consulting are in the area of safety and risk management in construction, and sustainable urbanization. Dongping is a vice president of CIB (International Council for Research and Innovation in Building and Construction, 2013-2016) and a member of the executive committee of GLF-CEM (Global Leadership Forum for CEM programs). He has been honored as Visiting Professors at UNSW in Australia, Chalmers University in Sweden and Loughborough University in the UK and serves as members of editorial board of several international journals, such as Safety Science and Construction Management and Economics.

Dr. Samuel Guo, Tsinghua University

Dr. Guo is an associate professor in the Department of Construction Management at Tsinghua University in China. His research areas include Construction Information Technology, Building Information Modelling (BIM), Virtual Construction, Virtual Prototyping, and Construction Management Innovation.
APPENDIX B: SPEAKER BIOGRAPHIES

Lecture 1: Course Introduction, Construction Challenges in a Global Environment, and Discussion of First Assignment

Michael B. Gwyn (in studio at NC State)

Michael Gwyn is Senior Vice President of Leidos Engineering, LLC and President of Leidos Constructors, LLC, the Design-Build and EPC arm of Leidos. Mr. Gwyn is responsible and accountable for facilities, manufacturing, industrial and process related engineering and construction. He has been involved in a variety of projects outside the continental United States for U.S. Government facilities including U.S. Embassies, facilities for USAID and housing projects for the Navy. Other international design-build and construction projects include the Petronas Towers in Kuala Lumpur, various facilities for the US government on Kwajalein Atoll, diesel power plants, data centers, cable stations, schools, hospitals, water and wastewater treatment plants and radio relay stations for the VOA.

Dr. A. Ramakrishna (pre-recorded)

Dr. A. Ramakrishna served as President of Indian National Academy of Engineering (INAE). Dr. Ramakrishna served as Deputy Managing Director of Larsen & Toubro Limited (L&T Ltd.) from March 2000 to 2004. He served as the President and Deputy Managing Director of Larsen and Turbo's ECC Construction Division. He started his career in 1962 with Engineering Construction Corporation Limited then a wholly owned subsidiary of Larsen & Toubro Limited. He serves as Vice-Chairman of National Academy of Construction. He has been Independent Non-Executive Director of GVK Power And Infrastructure Ltd. since September 10, 2005. He served as a Director of GVK Industries Ltd.
Lecture 2: Global Legal Issues for Engineers and Constructors

Michael C. Loulakis (Video conference)

Mike Loulakis is a lawyer with more than 30 years of legal and consulting experience in all aspects of the construction industry. His company, Capital Project Strategies, concentrates on developing the project delivery, procurement, contracting and risk management strategies for both domestic and international projects. He is particularly well-known for his extensive background in EPC, design-build and other alternative project delivery systems, and has been one of the industry’s most active writers and speakers on the subjects. Mr. Loulakis holds a civil engineering degree from Tufts University and is a member of the National Academy of Construction. He has written “The Law” column for Civil Engineering magazine since 1981.

Dr. Pin-Chao Liao (pre-recorded)

Dr. Pin-Chao Liao, Project Management Professional (PMP), is an Assistant Professor in the Department of Construction Management, Tsinghua University. His areas of research include Engineering Management, Construction Safety, Productivity, Law and Economics and Green Building. He is also a member of the Project Management Institute and also a former post-doctoral research fellow, Construction Industry Institute (CII).

Dr. Ghada Gad (pre-recorded)

Dr. Ghada M. Gad is an Assistant Professor in the Construction Management Department at Bowling Green State University. She received her Ph.D. degree in Civil Engineering (Construction emphasis) from Iowa State University. Her Ph.D. research focused on international construction contracts where she was investigating the effect of culture, risk, and trust on choice of dispute resolution methods (DRM). She developed a model to help international contractors from English-speaking countries in deciding which DRMs to use if planning to operate in the Middle East or Asia. Her research interests include human factor effects on construction projects, alternative project delivery methods, and risk management.
Lecture 3: Culture, Communication, Conflict, and Leadership

Sean Terrell (in studio at NC STATE)

Sean Terrell has 25 years of construction and project management experience in various industrial markets and is a Vice President with Black & Veatch. His recent roles include Director of Construction & Procurement operations for Sub-Saharan Africa; Project Field Manager of a mega project in South Africa; Project Field Manager for a combined cycle conversion project on the Big Island of Hawaii; and Project Manager, Assistant Project Manager, Project Controls Manager and Superintendent for a variety of biodiesel plant projects, combined cycle power plant projects and coal fueled power plant projects. Terrell’s project experience includes international and U.S. locations. Terrell is currently the Managing Director and Vice President of Overland Contracting Inc. (OCI). OCI is a Black & Veatch company and a full-service EPC contractor. OCI delivers tailored construction solutions to the power generation, power delivery, telecommunications, and water industries.

Lionel Randolph (in studio at NC STATE)

Lionel Randolph is Director of Business Development for Yates Construction in Birmingham, AL. He is responsible for work acquisition for the General Industrial business unit and supports other Industrial and Commercial business units within Yates. He has a degree in Mechanical Engineering from NC A&T State University. He has 18 years’ experience in engineering design, project management, and construction.

Dr. Avi Wiezel (pre-recorded)

Dr. Wiezel consistently ranks among the top five percent of best teachers in the Fulton School and has received the Outstanding Faculty Member Award. He has also served as the head of the Del E. Webb School of Construction. His research focuses on the human activities in construction and includes models for improving the skills of craftsmen, crews, project managers, and company executives. Prior to his academic career, Dr. Avi Wiezel held several managerial positions at construction and engineering firms in Europe and the Middle East.

Dr. Ashwin Mahalingam (pre-recorded)

Dr. Ashwin Mahalingam is assistant professor in the Building Technology and Construction Management division of the Civil engineering department at the Indian Institute of Technology at Madras (IITM), India. His current research interests are in the areas of infrastructure planning and management, risk assessment and allocation, mechanisms for shaping successful infrastructure projects and Cross-cultural issues on global infrastructure projects. He also performs research in the areas of sustainability and social entrepreneurship.
Lecture 4: Managing Global Engineering and Construction Projects

Chris Reseigh (in studio from NC State)

Chris Reseigh recently retired from his position as the Global Director of Program and Construction Management for Parsons Brinckerhoff. He was the former President of PBCS Inc., the program and construction management subsidiary of Parsons Brinckerhoff (PB) for 15 years. His career in engineering and construction management spans more than 40 years and he is a Principal Professional Associate, Principal Project Manager and a PE in many states. He is the Past President of the ACE Mentoring Affiliate for the Greater Washington DC/Northern Virginia Metro area and is a member of the National Academy of Construction.

Mike Bellamy (pre-recorded)

Mr. Bellamy has approximately 32 years of progressive complex civil engineering design, project management and construction management experience. He has worked on major projects and programs in the United States, Europe, Africa, Caribbean, and Central America with the U.S. Army Corps of Engineers and Naval Facilities Engineering Command. Most recently, Mr. Bellamy served as Director of the Office of Engineering, Design and Construction at the Smithsonian Institution, where he led various groups including engineering and design, construction management, cost engineering and geospatial engineering. Mr. Bellamy is presently a Vice President with Clark Nexsen Architecture and Engineering firm. He holds a Bachelor of Science degree in civil engineering and a Master of Science degree in building construction management from the Virginia Military Institute and Purdue University. He is also registered professional engineer in the State of Virginia.

Mike Carrancho (pre-recorded)

Mr. Carrancho has more than 20 years of design and construction experience in the United States and abroad. Mr. Carrancho is currently the Associate Director, Engineering & Design Division, of the Smithsonian Institution. From 1996-2010 Mr. Carrancho served in many professional capacities for the Naval Facilities Engineering Command, Europe Africa and Southwest Asia located In Naples, Italy. While serving there he was responsible for four business lines providing: Design and Construction services, Planning & Real Estate Acquisition, Environmental Services and Facilities Maintenance and Operations. He also served as Chief Engineer, where he was the Authority Having Jurisdiction for United States and Host Nation code compliance issues in the countries of Portugal, Spain, Italy and Greece. He presided over $1 billion worth of design and construction projects during his incumbency. Mr. Carrancho is a registered professional civil engineer in the state of California and is a LEED Green Associate.
Lecture 5: Global Construction Financial Techniques

Dr. A. Thillai Rajan (in studio from IIT-Madras)

Dr. A. Thillai Rajan is currently an Associate Professor in the Department of Management Studies at IIT Madras. His research areas include Corporate Finance, Project and Infrastructure Finance, Public Private Partnerships and Venture Capital. Prior to joining academia, Thillai has over 8 years of experience in leading corporations such as IL&FS Investment Managers and Infosys Technologies. In his academic and industry career he has obtained several fellowships and awards such as the Fulbright Nehru Fellowship, Endeavour Executive Fellowship, and the Chevening Gurukul Fellowship. He is also a recipient of the Young Faculty for his teaching and research activities.

Harry Sambells (pre-recorded)

Mr. Sambells is President of Sambells Global Consulting and a former Senior Vice President and General Manager for the oil and gas division of Canada’s largest engineering consulting company in Calgary, Alberta. He has been a successful Project Director on billion dollar projects from execution of conceptual studies to execution of major EPC Lump Sum projects. His experience includes mining developments in Canada’s arctic to major projects in the deserts of Saudi Arabia. He has lectured and participated in panel discussions at the University of Calgary, PMI Conferences, Canadian Heavy Oil Association, and has been lecturer and chairman at several Canadian Institute seminars in Canada and is also the co-chair of the Project Management Advisory Council at the University of Calgary.

Dr. WANG, ShouQing (pre-recorded)

Dr. WANG, ShouQing is a Professor at the Department of Construction Management, Tsinghua University, Beijing, China and Deputy Director, Institute of International Engineering Project Management, Tsinghua University. His research interest is mainly on Public-Private Partnership and Risk Management, and has produced numerous publications. He is also Chairman of the China National Collaboration Network for M.Eng.(PM) Education (161 universities).
Lecture 6: Global Productivity Issues on Construction Projects

Dr. Koshy Varghese (in studio from IIT-Madras)

Dr. Koshy Varghese is a professor with the Department of Civil Engineering, Indian Institute of Technology Madras (IITM). His research interest is in the area of computer integrated project delivery. He has guided numerous Masters and Doctoral students and has been published widely in refereed journals and conferences. He has been a visiting faculty at the University of Texas at Austin, and a visiting eminent scholar at the Del E. Webb School of Construction at Arizona State University. He is a recipient of ASCE best paper award for Computing in Civil Engineering as well as the IAARC Tucker-Hasagawa award for contributions to automation in construction.

Gregory A. Howell, P.E., M.S.C.E. (pre-recorded)

Gregory A. Howell is co-founder and managing director of the Lean Construction Institute (LCI), a non-profit organization devoted to production management research in design and construction. Howell brings 35 years of construction industry project management, consulting and university-level teaching experience to LCI. Prior to his appointment as the Associated General Contractors' Visiting Professor in Construction Management at the University of New Mexico in 1987, Howell worked as a project engineer on heavy construction and general building projects and headed his own construction consulting firm for ten years. He is a member of the National Academy of Construction.
Lecture 7: Bidding Considerations in other Countries

Bob Preito (call-in)

Bob Prieto is currently Chairman & CEO of Strategic Program Management LLC. Most recently he was a senior vice president of Fluor and previously Chairman of Parsons Brinckerhoff. He has led sales and operations globally throughout his career and is author of 8 books and over 500 papers related to management within the industry. He is a member of the National Academy of Construction, a CMAA Fellow and a member of ASCE’s industry Leaders Council. Previously he served as a US presidential appointee to ABAC and chairman of the World Economic Forum’s Engineering & Construction governors.

Dr. Dongping Fang (pre-recorded)

Dr. Dongping FANG is a Professor and head at Dept. of Construction Management, School of Civil Engineering, Tsinghua University. He is the founding director of (Tsinghua–Gammon) Construction Safety Research Center. His research, teaching and consulting are in the area of safety and risk management in construction, sustainability and green construction in which more than 200 reports, papers and books in English, Japanese and Chinese have been published. Dongping is a board member of CIB and the Chair of CIB program committee (2010-2013). He is a member of the executive committee of GLF-CEM. He has been honored as Visiting Professors in Australia, Sweden and the UK. He also serves as member of editorial board of several international journals.

Dr. Daniel He (pre-recorded)

Dr. Daniel is a professor in the Department of Construction Management and Real Estate at Tongji University. His research fields include: enterprise-level multi-project management, organizations and enterprise environment, and large-scale and complex group engineering and project management.

Lecture 8: Construction Practices in the United States
Dr. Jaselskis and students from North Carolina State University

Lecture 9: Construction Practices in India
Dr. Kalidindi and students from IIT-Madras
Lecture 10: Construction Practices in China and Chinese Taipei
Drs. Zhang and Liu at Tianjin University and Dr. and Guo at Tsinghua University

Dr. H. Ping Tserng (pre-recorded)

Dr. H. Ping Tserng is a professor at the Department of Civil Engineering of National Taiwan University. He has a PhD degree in Construction Engineering and Management from University of Wisconsin-Madison and he is an official reviewer or editorial board member of several international journals. He has published 40 research papers in SCI journals. His research interests include advanced techniques for project management, construction finance, knowledge management, management information system, GPS/Wireless Sensor Network, and automation in construction. He also is a corresponding member of Russian Academy of Engineering, committee member of The Public Construction Golden Quality Award in Taiwan, The Dispute Review Board for Government Procurement in Taiwan, and the Vice-president of Department of Civil Engineering of National Taiwan University.

Steven Huang (pre-recorded)

Mr. Wen-Haw (Steven) Huang is a general manager of the Long Reign Development Co., a real estate company in Taipei. Currently, he is a Ph.D. Student in the Department of Civil Engineering at National Taiwan University. His research interests are construction finance, construction management, and project performance evaluation.
Lecture 11: Construction in Germany, Panama and the UK/Ireland

Dr. Hans Alfen (Bauhaus-Universitat Weimar)

Dr. Alfen is head of the Chair of Construction Economics and the Knowledge Centre@Weimar at the Faculty of Civil Engineering of the Bauhaus-Universität Weimar. He holds a Ph. D in civil engineering and a degree in business administration both from RWTH Aachen, Germany. Before joining the Bauhaus-Universität Weimar in 2000 he was Professor for Construction Management (University of Bujumbura in Burundi for 3 years) and held leading positions in the Consulting (GITEC GmbH for 3 years) and the Construction Industry (HOCHTIEF Project development GmbH for 7 years). He has more than 20 years of professional experience in the design, financing, construction, maintenance and operation of infrastructure projects in about 25 countries in Africa, Asia, Europe and Latin-America. Specific project work comprising: institutional strengthening and training, reorganisation, commercialisation and privatisation of public utilities mainly in the transport sector; technical planning and design, construction supervision, legal and economical structuring, business and corporate planning, structured and project finance in relation to privately financed infrastructure projects; member of supervisory board in several special project companies.

Dr. Rodolfo Valdes-Vasquez (pre-recorded)—available for Q&A

Dr. Valdes-Vasquez, a former Fulbright Scholar, is an Assistant Professor in the Department of Construction Management at Colorado State University. He is committed to advancing research and teaching in the sustainability of infrastructure projects. His previous work includes developing a framework of social sustainability processes for infrastructure projects that aims to help decision makers understand these processes and their interrelationships to better address social considerations that are often overlooked. Also, he collaborated with the Panamanian Construction Chamber, research that resulted in guidelines for creating construction safety programs. Dr. Valdes-Vasquez is a member of ASCE, Chi Epsilon, SACNAS, and CRC organizations. He believes that educating the next generation of professionals, researchers, and educators will play a pivotal role in making sustainability a standard practice in the engineering and construction professions.

David Comiskey (pre-recorded)

Mr. Comiskey is a lecturer in Architectural Technology at the University of Ulster and has received awards for innovation in teaching and learning, recently being awarded a Distinguished Teaching Fellowship. His research interests focus on innovative building detailing techniques and minimizing heat loss in buildings due to thermal bridges. He also has a strong interest in Building Information Modeling (BIM) and built environment education. He is a Chartered Architectural Technologist and Chartered Builder and prior to his academic career worked in architectural practice.
Lecture 12: Construction Practices in South Africa and Canada

Dr. David Root (Witwatersrand)

Dave Root is Professor and Head of School at the University of Witwatersrand’s School of Construction Economics and Management. Until 2011 he was Associate Professor and previously Senior Lecturer in the Department of Construction Economics and Management at the University of Cape Town which he joined in 2003. He originally trained and practiced as a Chartered Building Surveyor in consultancy in both public and private sector client organisations in the UK before entering academia. He is a Fellow of the CIOB and RICS and is registered with the SACPCMP as a Construction Project Manager in South Africa. His current research interests are around design management, procurement, and construction industry development.
Lecture 13: Construction Practices in the Middle East and Hong Kong

Dr. Heng Li is a Chair Professor in the Department of Building & Real Estate at The Hong Kong Polytechnic University, and he is also a Visiting Professor in Harbin Institute of Technology, Chongqing University, and Queensland University of Technology. Dr. Li has conducted many funded research projects related to the innovative application and transfer of construction information technologies, and he has published 2 books, more than 200 journal papers in major journals of his field and numerous conferences papers in proceedings. Dr. Li is also a Reviews Editor of a leading research journal - Automation In Construction.

Tamer E. El-Diraby is an Associate Professor and Director of the Centre for Civil Informatics at the Dept. of Civil Engineering, University of Toronto. He holds a PhD in Civil Engineering from the University of Texas at Austin, USA. His work focuses on the use of and knowledge management tools to study and develop strategies for the e-city as means to realize the green-city. His research utilizes social and semantic web technologies to enhance and upgrade management systems in civil infrastructure with focus on: project management, asset management systems and context-sensitive design and construction. Prof El-Diraby has advised local and international public and private sector organizations in the areas of BIM, project management, business process reengineering, policy analysis, and asset management.

Steve Revay (pre-recorded)

Stephen Revay, FCSC, CCC, CFCC has been active for the past 35 years in the analysis of progress, productivity and cost on numerous construction projects. He has prepared or evaluated productivity and/or schedule analyses, including quantification of claims on construction projects throughout Canada, in the United States, the Middle East, Asia and South America. He has been qualified as an expert witness in both litigation and arbitration. He has been appointed as the Project Neutral on a $2 billion industrial project. He has acted as both a mediator and as arbitrator on different disputes. Mr. Revay has authored articles for various construction periodicals and conducted numerous seminars on construction disputes to owners and contractors alike. He frequently presents at in-house seminars and is a guest lecturer at the University of Calgary. Steve was President of AACE® (Association for the Advancement of Cost Engineers International) from June 2010 to June 2011.

Lecture 14: Term Project Presentations

Student presentations

Lecture 15: Term Project Presentations, Course Wrap-up

Student presentations
APPENDIX C: READINGS
(refer to https://courses.ncsu.edu/ce592/lec/601/)

Lecture 1: Course Introduction, Construction Challenges in a Global Environment

- Required Reading:
  - Chapter 1: Introduction (Global Engineering and Construction—GE&C)
  - Chapter 13: Preparing Engineers and Constructors to Work Globally (Global Engineering and Construction—GE&C)

Lecture 2: Global Legal Issues for Engineering and Construction Projects

- Required Reading:
  - Chapter 7: Global Legal Issues for Engineers and Constructors (GE&C)
  - Chapter 11: Global Planning and Construction Delays (GE&C)
- Additional Reading:
  - Trends in International Construction Arbitration

Lecture 3: Culture, Communication, Conflict, and Leadership

- Required Reading:
  - Chapter 2: The Concept of Culture and Global Issues Important to Engineers and Constructors (GE&C)
  - Chapter 24: Leadership in My Rearview Mirror (The DNA of Leadership)
- Additional Reading:
  - 5 Dimensions of National Culture—How Personal Preferences and Tendencies Can Influence Communication
  - Cultural Considerations in International Construction Contracts (Chan and Tse)
  - Institutional Theory as a Framework for Analyzing Conflicts on Global Projects (Mahalingam and Levitt)

Lecture 4: Managing Global Engineering and Construction Projects

- Required Reading:
  - Chapter 3: Managing Global Engineering and Construction Projects (GE&C)

Lecture 5: Global Construction Financial Techniques (including PPP)

- Required Reading:
  - Chapter 5: Global Engineering and Construction Alliances (GE&C)
  - Chapter 6: Global Construction Financial Techniques (GE&C)
Lecture 6: Global Productivity Issues on Construction Projects

- Required Reading:
  - Chapter 10: Global Productivity Issues on Construction Projects (GE&C)

Lecture 7: Bidding Considerations in other Countries

- Required Reading:
  - Chapter 8: International Engineering and Construction Standards (GE&C)
- Additional Reading:
  - Bidding Considerations in Developing Countries

Lecture 8: Construction Practices in the United States

- Required Reading:
  - Chapter 14: Country-Specific Information (North America) (GE&C)

Lecture 9: Construction Practices in India

- Required Reading: None Required

Lecture 10: Construction Practices in China

- Required Reading:
  - Chapter 14: Country-Specific Information (Asia) (GE&C)

Lecture 11: Construction Practices in Central America (Panama) and Europe (Germany and UK)

- Required Reading:
  - Chapter 14: Country-Specific Information (South America and Eastern and Western Europe) (GE&C)

Lecture 12: Construction Practices in South Africa and Canada

- Required Reading:
  - Chapter 14: Country-Specific Information (Africa) (GE&C)

Lecture 13: Construction Practices in the Middle East

- Required Reading: None Required

Lecture 14: Term Project Presentations

- Required Reading: None Required

Lecture 15: Term Project Presentations and Wrap-up

- Required Reading: None Required