

BCN 5906 – LEAN FOR CONSTRUCTION
PRELIMINARY SYLLABUS
SUMMER 2021

INSTRUCTOR

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Dr. Lincoln Forbes is a Registered Professional Engineer (FL) and LEED® Accredited Professional with over 30 years of experience in various aspects of facilities design, construction, and maintenance as well as quality/performance improvement. He specializes in the area of lean construction, a method of project delivery that draws on the success of the Toyota Production System. Dr. Forbes holds the CM-Lean designation of the Associated General Contractors of America (AGC). He has published several books, book chapters, and papers on the application of lean techniques and quality and productivity improvement in construction. A Fellow of the Institute of Industrial and Systems Engineers, (IISE), Dr. Forbes is also Past President of IISE's Construction Division. He is a Senior member of the American Society for Quality (ASQ) and a member of both The Lean Construction Institute, and the International Group for Lean Construction

WELCOME MESSAGE

Dear class members:

Welcome to this special course on the topic of lean construction and lean project delivery. First introduced through research efforts in the 1990's lean methods have been applied to many design and construction projects over the years with very positive results in the speed of construction, reduction in cost, reduction in rework, and very high levels of stakeholder satisfaction. The construction industry has been gradually adopting it for several years but the impact in the early years was modest due partly to the industry's resistance to change. Through the advocacy of such organizations as the Lean Construction Institute, (LCI), the Associated General Contractors of America (AGC) and many other industry groups in recent years, we have seen an increasing amount of interest in lean and a rapidly growing number of successful projects. This marks a significant turning point in an industry that has lagged behind many other industries in productivity, quality, safety, and stakeholder satisfaction.

This course provides a valuable understanding of the principles that the lean methodology is based on, and also equips participants with a foundation in the tools and techniques that have been used in successful projects. This knowledge will undoubtedly equip course participants to provide value to organizations as they increasingly adopt lean construction. The text "Lean Project Delivery and Integrated Practices in Modern Construction" was written for this type of course and will be used as a main resource. I suggest that class members should obtain it as quickly as possible in order to be ready for the course. (It may

be rented or bought as an ebook to reduce costs.)
Please accept my best wishes for a successful term!

CATALOG DESCRIPTION

A study of the principles and practices relating to lean design and construction. This course introduces the foundational principles of the lean philosophy and traces the evolution of lean practices in the Owner, Architecture, Engineering and Construction (OAEC) community. Emphasis will be placed on the way in which lean enhances value and reduces waste within a culture of respect. The roles of empowerment and collaboration will be described as being central to that concept. Environmental sustainability will also be presented as an important societal value and a beneficial construction practice.

COURSE OBJECTIVES

Upon completion the student will be able to:

- Define and describe lean practices such as lean construction and its variants such as, lean and integrated project delivery
- Explain the origins of lean theory in the Toyota Production System and related work by quality experts
- Describe and explain lean practices such as the Last Planner System and the Lean Project Delivery System, and their impact on design and construction activities
- Explain the principles and logistics of Integrated Project Delivery
- Conduct lean process measurement and improvement with several tools including A3 charts, Pareto charts, Ishikawa diagrams, and PPC metrics.
- Understand the role of cultural factors and human factors in creating and sustaining lean performance
- Describe the intersection between lean practices and environmental sustainability.

Teaching Methodology

This is a fully online course in which all of the instructional materials and activities are delivered through Canvas, and/or other internet-based media. Some exams may require the use of an approved proctoring center. Should you have any questions, please contact the professor.

Policies

Before starting this course, please review the following pages:

- [Policies](#)
- [Netiquette \(Links to an external site.\)](#)

- [Technical Requirements and Skills](#)
- [Accessibility and Accommodation](#)
- [Panthers Care & Counseling and Psychological Services \(CAPS\)](#)
- [Academic Misconduct Statement](#)

Course Prerequisites

Review the [Course Catalog \(Links to an external site.\)](#) webpage for prerequisites information.

Proctored Exam Policy

This course requires **TWO** proctored exams using **HonorLock**.

The exams for this course will be monitored by an online integrity system to ensure students' compliance with the University's Code of Academic Integrity. To avoid being deemed in violation of the Code, students may not access unsolicited aids during exams, including, but not limited to: test-banks, online search engines, unauthorized web applications, and other means, via their test-taking device or any other electronic device. Students also may not receive nor provide unauthorized assistance to/from other persons, or copy, save, or share unauthorized copies of exams.

Review some common FAQs below concerning specifics when using the Honorlock proctored exam tool.

What do I need to do before taking my exam?

The best thing for you to do before taking your exam is to be prepared with the material your instructor is testing you on. Additionally, you should make sure that your webcam-enabled computer is charged and that you have a good Internet connection before starting your exam.

Why do I need a photo ID? What forms of ID are acceptable?

We need to check the photo and name on your photo ID to make sure you are the same person each time you log on to our system. Forms of IDs that are acceptable are: your student ID, a driver's license, or a military ID. We need a form of ID that has both your name and picture on it.

What do I do if something goes wrong during my exam?

Honorlock offers technical support twenty-four hours a day, 7 days a week. If something goes wrong either before or during an exam, students can connect with [Honorlock's support team \(Links to an external site.\)](#) by phone or by live chat. You can also contact [FIU Online Support Services \(Links to an external site.\)](#).

What equipment is needed to use Honorlock?

Depending on how your instructor set up Honorlock, you may need a webcam, microphone, keyboard, mouse, monitor and high speed Internet. It's that easy—no software installation or extra hardware is required.

What is Honorlock doing to protect my privacy?

Honorlock takes student privacy very seriously—please review our [privacy policy \(Links to an external site.\)](#) if you have any questions. Honorlock's goal is to provide students a safe, simple, and secure method for taking an online exam anywhere, in the privacy of one's personal space. Students' data is transferred over secure encrypted protocols and data is collected in compliance with FERPA standards.

I heard you detect cheating on cell phones. Can you see my Facebook, Instagram, etc.?

No, and we take student privacy very seriously. We are not accessing any personal data on your devices. Our auto-monitoring is limited to test-related content such as test answer banks and homework answer sites. To avoid being flagged, we recommend not visiting any unauthorized websites while you are actively taking your test. For additional resources concerning Honorlock, feel free to visit the [Honorlock Proctoring Student Resources Page \(Links to an external site.\)](#).

If you encounter any further technical difficulties or have any questions, please contact [FIU Online Support Services \(Links to an external site.\)](#).

On-campus proctoring will not be available.

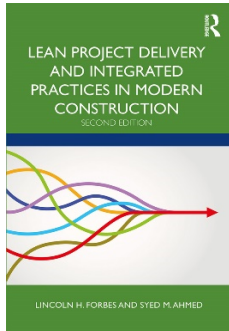
Exam 1

Exam Option	Start Date	Start Time	End Date	End Time	Exam Duration
Honorlock	TBA	7:00 AM	06/26/2021	10:00 PM	120 minutes

Exam 2

Exam Option	Start Date	Start Time	End Date	End Time	Exam Duration
Honorlock	TBA	7:00 AM	7/31/2021	10:00 PM	120 minutes

Textbook and Course Materials



Lean Project Delivery and Integrated Practices in Modern Construction:

Forbes, Lincoln.H & Ahmed, Syed.M

CRC Press, 2020

ISBN978-1-138-31124-4

This book provides a multi-faceted approach for applying lean methodologies to improve design and construction processes. Recognizing the wide diversity in the landscape of projects, and encompassing private and public sector activity, buildings and infrastructure, the book expands upon the detailed coverage of integrated project delivery and new lean tools and techniques <https://www.routledge.com/Lean-Project-Delivery-and-Integrated-Practices-in-Modern-Construction/Forbes-Ahmed/p/book/9781138311244>

You may purchase your textbook online at the [FIU Bookstore \(Links to an external site.\)](#). It may also be acquired through CRC Press or Amazon.com.

Expectations of this Course

This is an online course, which means most (if not all) of the course work will be conducted online. Expectations for performance in an online course are the same for a traditional

course. In fact, online courses require a degree of self-motivation, self-discipline, and technology skills which can make these courses more demanding for some students.

Students are expected to:

- Review the “how to get started” information located in the course content.
- Introduce yourself to the class during the first week by posting a self-introduction in the appropriate discussion forum.
- Take the practice quiz to ensure that your computer is compatible with Canvas.
- Interact online with instructor/s and peers.
- Review and follow the course calendar.
- Log in to the course a minimum of 3 times per week.
- Respond to discussion boards, blogs, and journal postings with 2 days.
- Respond to emails within 3 days.
- Submit assignments by the corresponding deadline.

The instructor will:

- Log in to the course several times per week, as deemed necessary.
- Respond to discussion boards, blogs, and journal postings within 3 days.
- Respond to emails within 3 days.
- Grade assignments within 5 days of the assignment deadline.

SPECIAL NOTE: It is possible that travel schedules may reduce the professor’s Internet access for brief periods, and make it difficult to meet the posted response times. Should that occur, everyone will be notified, so that there is minimal, if any, undue inconvenience.

Course Communication

Communication in this course will take place via **Canvas Inbox (Conversations)**.

The Inbox feature is an external communication tool that allows users to send messages to users enrolled within the course. Messages are sent to the students’ FIU email on record. The Inbox tool is located on the Course Menu, on the left side of the course webpage. Please note that this site is preferred for emails as they are kept close to other course information)

Visit our [Writing Resources \(Links to an external site.\)](#) webpage for more information on professional writing and technical communication skills.

Discussion Forums

There will be a discussion forum as a graded activity. Specific comments will be posted by the instructor, and class members will be required to respond to them and initiate new comments. There will be specific time frames for this activity and they should be adhered to. Late responses may be given a lower point value as a result, so class members should maximize their grades by observing the required time frames.

Class members should also keep in mind that discussion forum postings will likely be seen by other members of the course. Care should be taken when determining what to post.

Assignments

- Each assignment should have a cover sheet with:
 1. **Course Name**
 2. **Description of the Assignment**
 3. **Date**
 4. **Team number and names of team members (If the assignment is individual, then the name of the student should be listed instead.**
- Please use Times New Roman, 12 point, with single spacing and 1 inch margins
- All assignments are to be submitted in Word.doc format. **Pdf's will not be accepted except in special cases that are requested of the professor!**
- Responses to problems should list numerical answers very clearly, underlining them if possible. As much as possible, calculations should be shown. If responses are not clear, then points may be lost because of the difficulty in grading the assignment.
- If it becomes necessary to scan an item and include it in the response to an assignment, please use a scanner where possible instead of a cell phone. Cell phone pictures often distort scales and lack the clarity needed for grading one's work.
- Assignments are due by **11:59pm of the start of the respective week**, unless otherwise stated. Please review the course calendar for due dates.

Homework Assignments:

Students will be given several homework assignments during the course of the term. All team members are expected to collaborate in preparing the assignments, and will share the respective grades for that work. It will be assumed that all team members fully understand the content of these assignments.

Teams:

Students will be asked to work in teams./groups. (Unless the professor decides otherwise, teams will have three members) The ability to work as part of a team is considered to be an important attribute, especially in the construction environment; team members often bring many skills and experiences that can be shared for everyone's benefit.

Teams will be self-selected, preferably by the 2nd week of the course. If this process is delayed, the instructor may assign students to these teams. Team members should participate equally in the work assigned. If any members are consistently failing to meet expectations, the other members may be asked to provide a rating that may impact the credit for work performed.

Term Paper:

The term paper will be carried out as a team effort and presented as indicated in the class schedule. Guidelines will be provided separately.

Subject to the instructor's approval, students can work as a group with a maximum of three students in each group.

Please note that the following information only applies if your course requires the use of Turnitin to submit your assignments.

- Review the detailed [Turnitin Instructions \(Links to an external site.\)](#) on how to submit your assignments and how to review the Grademark comments (feedback) from your professor.

Assessments

In order to mitigate any issues with your computer and online assessments, it is very important that you take the "Practice Quiz" from each computer you will be using to take your graded quizzes and exams. It is your responsibility to make sure your computer meets the minimum [hardware requirements \(Links to an external site.\)](#).

Assessments in this course are not compatible with mobile devices and should not be taken through a mobile phone or a tablet. If you need further assistance please contact [FIU Online Support Services \(Links to an external site.\)](#).

There will be **TWO** exams; a Midterm and a Final.

The exams will both be online and open-book. When administered they will be made available for several days. The respective dates will be announced in the future.

Zoom Video Conference

Zoom is a video conference tool that you can use to interact with your professor and fellow students by sharing screens, chatting, broadcasting live video/audio, and taking part in other interactive online activities. We will be utilizing this tool to conduct **course instruction, exam reviews, student group communication and sometimes presentations.**

Zoom Meetings will be held on the following dates/time:

TBA

[Zoom Test Meeting Room \(Links to an external site.\)](#)

Use this link to access the Zoom Test Meeting Room. This meeting room is available to test out the software before joining an actual session.

Reference the provided links to access Zoom student tutorials to learn about the tool, how to access your meeting room, and share your screen.

- [Download Zoom \(Links to an external site.\)](#).
- [Login to Zoom through Desktop Application \(Links to an external site.\)](#)
- [Enable and Test Audio & Webcam \(Links to an external site.\)](#).
- [Schedule a meeting \(Links to an external site.\)](#) or [Join a Zoom meeting. \(Links to an external site.\)](#)
- [Invite others to join meeting. \(Links to an external site.\)](#)
- [Chat \(Professors\) - Students look at attendees section for instructions \(Links to an external site.\)](#).
- [Share My Screen \(Links to an external site.\)](#).
- [Record a Local Zoom meeting. \(Links to an external site.\)](#)
- [Host Control in Meetings. \(Links to an external site.\)](#)
- [Getting Started with iOS. \(Links to an external site.\)](#)
- [Getting Started with Android.](#)
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Course requirement	Weight
Discussions	10%
Exam 1	20%

Course requirement	Weight
Exam 2	20%
Term Paper	25%
Assignments (including class presentations)	25%
Total	100%