Course Syllabus, Policy, and Procedures

School of Building Construction, Georgia Institute of Technology

BC 6550

Design and Construction Processes for Integrated Services

Canvas (BC6550): https://gatech.instructure.com/courses/479764

Instructor:	Dr. **Pardis Pishdad**, Full Professor
Class Times:	Monday & Wednesday 5:00 pm – 6:15 pm
Class Location:	Skiles | Room 154
Office Hours:	Tuesday 11:00am – 12:00pm, or by appointment.
Office Location:	John & Joyce Caddell Building
Email:	**pardis.pishdad@gatech.edu**
Phone:	(404) 894-7100

Teaching Assistant:	**Tran Duong Nguyen**, Ph.D. Student, School of Building Construction
Office Hours:	Wednesday 4:00pm – 5:pm, or by appointment
Office Location:	Hinman Building 216 Smart BEES Lab
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Required Readings:

- Integrating Project Delivery by Martin Fischer, Howard W Ashcraft, Dean Reed, Atul Khanzode, 2017, Wiley, ISBN: 978-0-470-58735-5

Recommended Readings:

- BIM Handbook by Eastman, Teicholz, Sacks, Liston, 2011, Second Edition, Wiley, ISBN: 978-0-470-54137-1
- Other alternative readings will be posted on Canvas as needed.

Course Description:

This state-of-the-art advanced course aims to introduce a new set of working processes to design and construct high-performance and valuable buildings efficiently and collaboratively. In this course, you will understand the current industry challenges associated with collaboration and integration in design and construction processes. Also, you will learn various techniques and technologies that enhance collaboration and integration, such as Lean Construction, High-performance green building, IPD (Integrated Project Delivery), BIM (Building Information Modeling), Prefabrication, Digital Twin, Cloud-based technology, among others relevant to integration. This course draws upon various active pedagogical methods, including interactive group debates, special lectures by industry speakers, and hands-on exercises. Students will experience how the new techniques and technologies can integrate resources, materials, and information and maximize efficiency, reduce waste, enhance stakeholder Trust, and enable better decision-making in delivering the built environment.

Learning Objectives and Outcomes:

a) Learning Objectives	Methods for Measuring Learning Objectives
a-1) Describe the current challenges associated with integration and collaboration processes.	Class Debates, Reflection Essay & Theory Quiz
a-2) Have an in-depth understanding of integrating approaches, including Lean, IPD, BIM, Trust-building attributes, HPGB, Blockchain, and Smart Contract	Class Debates, Reflection Essay & Theory Quiz

a-3) Create a new framework for the integrated design and construction processes using various techniques and technologies	Final Project & Team Presentation
a-4) Conjecture future directions of the integrated design and construction processes.	Final Project & Team Presentation
a-5) Apply interview-based case study methods to analyze real-world projects, identifying integration challenges, solutions, and lessons learned from industry professionals.	Industry partner interview, case study report, and team presentation
b) Learning Outcomes	**Methods for Measuring Learning Outcomes**
b-1) Teamwork	Team Project & Peer Evaluation
b-2) Communication Skill	Final Presentation, Report & Peer Evaluation
b-3) Writing Skill	Theory Quiz, Reflection Essay & Final Report
b-4) Organizational Skill	Class Debates, Reflection Essay & Final Presentation & Report

Grading Scheme:

Criteria		Total Weight
A. Theory Quizzes	A-1. Theory Quiz 1 (15%)	**30%**
	A-2. Theory Quiz 2 (15%)	
B. Reflection Essays & Assignments	B-1. Why do we need Integration in Construction Projects? (5%)	**15%**
	B-2. Project Delivery Methods (5%)	
	B-3. How can you utilize BIM and other technologies in construction projects (5%)	
C. Final Project	C-1. Project Proposal (5%)	**35%**
	C-2. Final Report (15%)	
	C-3. Team Presentation (15%)	
D. Individual Performance in a team as determined by Peer Evaluation		**10%**
E. Attendance, Pop quizzes, and Participation in Class Debates		**10%**
Total		**100%**

The final grade is determined according to the above grading criteria. Course grading will be assigned as a letter grade according to the following scale:

A	B	C	D	F
90% - 100%	80% - 89%	70% - 79%	60% - 69%	0 - 60%

Final Team Project:

✓ The final project is to be completed as a team. You are expected to study how the techniques or technologies introduced in the class or other innovative solutions can address the industry challenges associated with integration and collaboration. The project report will be based on a case study of a real-world project identified through collaboration with an assigned industry partner. Teams will conduct an interview with their industry partner to identify a real-world project that is complex and requires enhanced integration between design and construction processes. The case study should highlight compelling stories and valuable lessons learned, including challenges encountered, both negative and positive outcomes, and strategies used to overcome obstacles. Special emphasis should be placed on techniques that improved integration and collaboration, as well as key practices that fostered trust between the design and construction teams. Students should also evaluate the value gained from such integration and trust, or the costs incurred when these elements were lacking.

✓ To ensure consistency across case studies, all teams will use a standardized set of interview questions provided by the instructor. The final deliverables include: 1) Project Proposal (brief project description, rationale, and

partner confirmation); 2) Final Report (case study analysis with interview findings) and 3) Team Presentation (summary of key insights and recommendations). The groups are expected to submit a Project Proposal as an interim deliverable by Oct. 22nd. The proposal should include a short but specific description of the critical challenge. For example, instead of stating *"low productivity"* in the construction industry, you should state, *"the low productivity led by many changes in the design phase."* The proposal should also indicate which technique or technology your group will analyze and some rational reasons. Based on the proposal, you will have two workshop sessions to develop and improve your team's ideas. After the workshop, you will finalize the report and present the project. The due dates for the project's Final paper and Presentation are on Dec. 1st. Please double-space your paper in 10-point Times New Roman font and cite your sources using the APA citation format and no more than 10 pages, including the reference page.

Course Schedule

Week	Date (M & W)	Topics	Readings/ Assignments & Due Date
1	18-Aug	**Session 1-A:** Introduction to the Course and Instructor & Students' Self-Introduction	Read the Syllabus
	20-Aug	**Session 1-B:** The Design and Construction Processes	
2	25-Aug	**Session 2-A:** Industry Challenges and Evolving Integrated Paradigms	Read Chapter 1 & 3 & Canvas References
	27-Aug	**Session 2-B:** A Framework for Integration: System, Process, Organizations, Information	
3	1-Sep	Labor Day - No Class	
	3-Sep	**Session 3-A:** Integrated Production Management	Reading Chapter 15 **Assignment #1:** Reflection Essay - *Why do we need integration in construction projects?* Due 9/15 by 5:00 pm
4	8-Sep	**Hands-on Practice:** Lean Game #1 + Lean Construction Recap	Read Chapter 8 & Canvas References
	10-Sep	**Session 4-A1:** Project Delivery Methods 1	
5	15-Sep	**Guest Speaker** on Cloud-based platform (TBN)	**Assignment #2:** *Project Delivery Methods.* Due: 9/29 by 5:00 pm Read Final Project Guidelines
	17-Sep	**Session 4-A2:** Project Delivery Methods 2 Final Project Announcement	Industry Partner Assignments + Standardized Interview Questions Provided
6	22-Sep	High Performance Building (TBN) (Site visit at Kendeda Building)	Read Chapter 2 & 16 & Canvas References
	24-Sep	**Session 4-B1:** Integrated Project Delivery 1	
7	29-Sep	**Session 4-B2:** Integrated Project Delivery 2	Confirm Team members by email before 11:59 pm (9/29) **Project Proposal** due 10/22 by 11:59 pm
	1-Oct	**Workshop 1:** Research Ideas, Database Search, Citation	
8	6-Oct	Fall Break - No Class	

	8-Oct	**Theory Quiz #1** (In-person)	Review Theory Quiz Guidelines #1
9	13-Oct	**Session 5-A:** Integrating Project Information & BIM	Read Chapter 6 & 10
	15-Oct	Emotional Intelligence and	
10	20-Oct	**Session 5-B:** The symbiotic relationship between IPD & Trust + Values Workshop	Read Journal Papers on Canvas **Project Proposal** due by 11:59 pm
	22-Oct	**Special Topic** on Digital Twin in Construction	
11	27-Oct	**Workshop 2:** Literature Review & Research Methodology Review of the Midterm Exam	**Assignment #3:** Reflection Essay - *How can you utilize BIM and other technologies in construction projects*? Due 11/5 by 5 pm
	29-Oct	**Session 6-A:** Integrating Process Knowledge & Prefabrication	
12	3-Nov	**Hands-on Practice:** Lean Game #2 Team project discussions with the professor	Read Chapter 12
	5-Nov	**Session 6-B:** Integrating Building Systems	
13	10-Nov	Team Project and Quiz Preparation (Asynchronous)	
	12-Nov	**Theory Quiz #2** (In-person)	Review Theory Quiz Guidelines #2
14	17-Nov	**Workshop 3:** Results & Conclusions	Review Presentation & Report Rubrics Read the Final Project Guidelines
	19-Nov	Review/ Recap/ Course Evaluation (CIOS) Team project discussion with the professor	
15	24-Nov	Team project Internal meeting	Submit the CIOS and confirm by email Due 11/24 by 5 pm
	26-Nov	Thanksgiving Break - No Class	
16	1-Dec	Final Project Presentation 1	Final Project PPT Slides, due by 5 pm
	3-Dec	GT Reading Period - No Class	
17	8-Dec	Final Project Presentation 2 (if needed)	Final Project Report, due by 11.59 pm Peer Evaluation, due by 11.59 pm

*The Course Instructor reserves the right to modify the course schedule to better serve the needs of students.

**Assignments and their due dates will be provided as the material is covered to allow for maximum flexibility.

Course Policies

In the following policies, you' indicates the 'student' and 'instructor' means 'faculty' or 'professor.'

Policies and Expectations: This course will be intense. It is not a traditional course. It is a cutting-edge course; thus, it may accompany a bleeding-edge experience. We should all contribute to its success by being enthusiastic,

cooperative, and patient. You must follow the course policies. You should be in class and strive to participate in class discussions when appropriate.

Assignment Deadlines: All assignments given are due on the date indicated. All students are expected to complete any and all assignments given. The instructor reserves the right to modify assignments as necessary. You will not receive credit for late assignments (homework, projects, readings, and others). However, the instructor will accept and correct these assignments to provide you with feedback that will benefit the learning process. **NO EXCEPTIONS.**

Class Attendance Policies: Attendance is mandatory for all class lectures and exams unless you are ill or officially excused by the instructor due to participation in a university function. There are no *"free cuts"* permitted, and there will be a penalty (as decided by the instructor) for not attending the class. If you attend fewer than 75% of the scheduled class meetings, you will not receive credit for the course. Any student arriving late for class or leaving early from class will be counted as absent from that class period. This policy is in your best interest since attendance is essential for understanding some of the complex reasoning processes covered in this course, which is critical for doing well in this class. In the case of unavoidable absences, you are responsible for making up the work done in class. The instructor is not responsible for providing the student with that information outside of class. It is your responsibility to obtain any missed information or handouts given in class from a classmate. You should exchange phone numbers or e-mail addresses with other students in the class to better facilitate note sharing, etc. Only enrolled students may attend class sessions.

Missing Classes for Personal Emergencies: Students may need to miss classes due to personal emergencies such as being hospitalized or being in a car accident. The Office of the Vice President and Dean of Students can assist students with documented emergencies by contacting professors on behalf of the student. For more information, please call the Office of the Vice President and Dean of Students or complete the Request Assistance Form.

Institute-Approved Activities: Students who are absent because of participation in approved Institute activities (e.g., field trips, athletic events) will be permitted to make up the work missed during their absences. Approval of such activities will be granted by the Student Academic and Financial Affairs Committee of the Academic Senate, and statements of the approved absence may be obtained from the Office of the Registrar. Please contact the Office of the Registrar for more information.

Methods of Communicating: You can also ask questions for clarification by e-mail, in class, or by visiting the instructor by appointment at their office. E-mails received after 5:00 pm will be answered the following day; after 5 pm on Friday, they will be answered the following Monday. Students are not permitted to discuss grades with the instructor via e-mail; they are only permitted to do so in person.

Method of Instruction: The course may combine discussion and feedback on students' work, guest speakers, visits by industry professionals, and teamwork.

Readings, Preparation, and Participation: The assignments, problems, cases, and discussions are an integral element of the course. Students are expected to complete readings and other assigned work before each class to participate fully in the discussion. Learning is approached as a participatory process, which benefits from student/teacher and student/student interaction.

Laptop/ Handheld Computer Use: Laptops and handheld computers may be used in class to work on the assigned project ONLY, not for other purposes, such as e-mail, website searches, chat, or other personal uses. Students using computers during class for work unrelated to that class must leave the classroom for the remainder of the class period.

Cell Phones: All communication devices must be turned off in the classroom. The use of cell phones, beepers, or other communication devices is disruptive and is therefore prohibited during class. No personal listening devices or personal transportation devices are permitted. **(See supplemental policies for additional information)**

Food in the Classroom: Students are not allowed to bring food into the classroom unless approved by the instructor.

Class Discussions: Your active and productive participation in class discussions is encouraged. Various viewpoints and opinions are encouraged and welcome. Questioning the ideas of others, including the instructor, is similarly welcome. However, the instructor will exercise her responsibility to manage the discussions so that ideas and arguments can proceed orderly. If your conduct during class discussions seriously disrupts the atmosphere of mutual respect, you will not be permitted to participate further.

Instructor's Absence or Tardiness: If the instructor is late arriving at class, you must wait a full 20 minutes after the start of class before you may leave without being counted absent, or you must follow any written instructions the instructor may give you about an anticipated absence or tardiness.

Plagiarism: Students are expected to do their own work on this course. Plagiarism is using another writer's or speaker's ideas without giving proper credit through standard documentation. All course papers, notes, homework, and projects submitted to the instructor are subject to textual similarity reviews to detect plagiarism. All submitted papers will be included as source documents in the reference database to detect plagiarism. The instructor will follow the Institute's policy for plagiarism.

Use of AI Tools (e.g., ChatGPT, CoPilot): AI tools may be used for support tasks like brainstorming or grammar checks, but you must disclose any use in your assignment. All work must reflect your own understanding and analysis. AI-generated content cannot be used in quizzes or graded assessments unless approved by the instructor. Undisclosed or excessive reliance on AI may be considered academic misconduct under the Georgia Tech Honor Code.

Academic Misconduct/Honor Code: Students in this course are responsible for behaving by the Georgia Tech Academic Honor Code. By registering for this course, you are committing to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon you as a member of the Georgia Tech community. The Institute Student Honor Code is printed in the Georgia Tech General Catalog and is available on the Web at www.honor.gatech.edu.

Disabilities: Any student needing accommodation for any sort of disability should contact the ADAPTS Office: Assistant Dean/Coordinator for Students with Disabilities, Smithgall Students Services Building, Suite 221. The phone number is (404) 894-2564.

Computer Specifications: To meet Georgia Tech standards, visit www.coa.gatech.edu/computing/comp_specs.htm for information on computer specifications. Internet access is required for this course, as is an e-mail account for communication with the instructor.

Policy Changes: Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Course Management: Canvas will be used to manage this course daily. Unless otherwise noted or instructed, all student submittals are to be uploaded to Canvas (assignments, other deliverables). It is the student's responsibility to review posted materials and have the required computer equipment to access course material on Canvas. If you have technical issues, visit Canvas. You should report them to the Online Support Center at http://info.Canvas.gatech.edu/faq.

Progress: Students must meet all progress check deadlines published on the course calendar. Failure to comply with this requirement shall result in instructor-initiated withdrawal from the course, resulting in W (if before the drop date) and WF (if after the drop date) on the **student transcript.**

Syllabus modification: The instructor reserves the right to make changes to the syllabus as she deems appropriate. For the most updated information, it is your responsibility to refer to the online syllabus posted on Canvas.

NO EXCEPTIONS – NO EXCUSES – NO EXTENSIONS

Re-grading: Student has until **one week** after receiving their grade on a homework, lab assignment, or exam to dispute the grade. Handling re-grades in this manner eliminates the "end of semester" digging for points. When disputing a grade, you should state the question, the dispute, and the number of points you feel you should have received for the question. Note that when you ask for a question to be regraded, the entire assignment may be regraded, and there is a possibility of losing points. The above policy applies to the final exam as well.

Appeals: A student who wishes to appeal to their grade has the right to fair consideration. If a student wishes to appeal their grade, they must submit the appeal in writing to the course professor within 24 hours of the conclusion of the course or by noon on the following Monday when the Defense is conducted on a Friday or prior to a University Holiday. A signature, date & time, and comment block must appear on the title page of the appeal to allow for the course professor's signature. Also, include a check box for *"Proceed with Appeal"* adjacent to the signature block.

The course professor's signature does not approve the appeal but merely acknowledges that the appeal process is underway with their knowledge. Include a one-page statement justifying the appeal. Include, to the greatest extent possible, details supporting your appeal (e.g., specific dates, times, worksheets, electronic files, names. etc.). The written appeal must be prepared in word-processed form (11-point Times New Roman font, 1" margins at top and bottom, 1" margins on left and right, pages must be numbered, all supporting materials must be attached, single-spaced text, all enclosures numbered sequentially and listed on the page after the title page). The title page must include the following information: Student Name, Semester, "BC 6550 APPEAL," University Name, Name of Course Professor, and Defense Date and Time.

The signed appeal package must be submitted to the School of Building Construction Chairperson during an appeals meeting that is held within 48 hours of the conclusion of the course or by Noon on the following Monday when the Defense is conducted on a Friday or before a University Holiday. Additional recourse may be available to the student and, if desired, should be discussed with the School Chairperson during the appeals meeting.

Other responsibilities:

- It is **YOUR RESPONSIBILITY** to obtain information/notes/assignments from classmates if you miss classes. **DO NOT** ask the instructor to provide for you.
- You are responsible for obtaining faculty checks by the dates indicated on the course schedule:
- If you do not have your work checked during scheduled sessions because of time constraints, you are responsibl e for making an appointment to get faculty feedback *before* the required deadline.
- Conflicts, problems, and/or issues with this course should be discussed as early as possible with the instructor, and it will be at the instructor's discretion to solve them as equitably as possible. Do not delay discussion, as sympathy for conflicts or problems diminishes with time. After the fact, it is not acceptable, nor is it brought to the instructor's attention towards the end of the semester.

* This syllabus is subject to change with prior notice. Please check the latest version on Canvas.