New courses are available beginning with the fall term in which they appear in the University Catalog.

This is a request for reactivation of a course in the system.  
☐ Yes  ☐ No

This course will be entered into the system as:  
Bi-Level ☐ Cross-Listed ☐ Dual-Numbered ☐ Full-Load ☐ None of these/Standard Listing ☐

In addition, please attach a course syllabus and/or more detailed description.

GRADES TO BE ISSUED
☐ A, B, C, D, F  ☐ A, B, C, D, F, CEU/Audit  ☐ CEU  ☐ S, U  ☐ P, F  ☐ Other

Additional Restriction ☐ and ☐ or Department head approval.

If this course replaces a course currently offered in BANNER, please indicate old course information and the date/term the course may be removed from the system.

Yes ☐ No ☐ Will this course be used to satisfy program or level student learning outcomes? If yes, review and signature required.

Yes ☐ No ☐ Will this course be used to satisfy the scholarly inquiry requirement? If yes, attach "Q" materials for review.

Yes ☐ No ☐ Will this course impact any existing programs? If yes, attach "Changing Graduation Requirements" form for each program impacted.

APPROVALS: On completion of description and course number verification, affix appropriate signatures as indicated, and submit to the Office of Graduate Programs, or Undergraduate Curriculum Committee Chair for placement on agenda.

Florida Institute of Technology • Office of the Registrar
150 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674-8114 • Fax (321) 674-7827
I. COURSE OVERVIEW AND OBJECTIVES:

Building Information Modeling (BIM) is the process of generating and managing a Building Information Model through the use of three-dimensional intelligent design information in a virtual design and construction (VDC) environment. BIM is used for design and integration of designs via digital modeling of physical and functional characteristics of a facility. In a BIM environment, the facility is represented by a parametric model that has shared knowledge resource for information that exists throughout its lifecycle, i.e. from earliest conception stage to demolition. Furthermore, BIM is a model-based process that promotes better communication and collaboration among all stakeholders throughout the entire lifecycle of a construction project where the shared objective is to create cost-efficient and sustainable buildings.

The course objective is to provide the students with a background in state-of-the-art BIM methodologies that comprise a collection of related processes, methods, and tools. These methodologies are used in activities typically conducted by the architecture, engineering, and construction (AEC) disciplines in building design and construction projects. The students will be introduced to the BIM processes and methods that are currently employed in the construction industry including software and hardware tools needed to support these processes and methods. In addition, approaches to incorporate BIM processes and methods at the project and company-wide levels will be discussed at length. The course will also touch on the social, technological, and legal aspects of BIM implementation. The classroom discussions will be reinforced by hands-on projects using a BIM software toolset to develop a design and construction model of a facility in a virtual environment.

II. PREREQUISITE:

Graduate/Senior Standing in Construction Management or Engineering (or Instructor’s Approval)

III. TEXTBOOK:

Design Integration Using Autodesk Revit (latest revision) – Architecture, Structure and MEP (Mechanical, Electrical, Plumbing) by Daniel John Stine.

IV. TOPICS COVERED:

1. Introduction to Building Information Modeling
   a. Definitions & Terminologies
   b. BIM versus Traditional CAD
   c. Parametric Modeling & Spatial Coordination
2. BIM Use Cases
   a. Roles & Responsibilities of Project Team Members
   b. BIM Workflow and Federated Models
3. Advanced BIM Methods
a. Design Integration: Architectural, Structural, and MEP  
b. Parametric Modeling for Cost Estimating  
c. Planning, Coordination, and Scheduling  

4. BIM Technology  
a. Technology Overview & Definitions  
b. Software/Hardware Tools, File Formats  
c. Technology Selection  
d. BIM Execution Plan  

5. BIM Contract Negotiation & Risk Allocation  
a. BIM Contract Negotiation  
b. Contract Liabilities and Standard of Care  
c. BIM Execution Plan Contract Terms  
d. Model Intellectual Property Rights  
e. Insurance & Surety Bonding Issues  
f. Risk Allocation and Management  

6. BIM Process, Adoption, and Integration  
a. Project-Level BIM Implementation  
b. Case Study: Energy Modeling  
c. Company-Level BIM Implementation  
d. Case Study: Facility Management  

V. CLASSROOM LECTURES (TWO CLASS SESSIONS PER WEEK):  

<table>
<thead>
<tr>
<th>SESSION</th>
<th>TOPIC</th>
<th>ASSIGNMENT</th>
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| Session 1: | Course Introduction  
Definitions & Terminologies | |
| Session 2: | PART I: Introduction to BIM  
BIM vs. Traditional CAD | Term Project |
| Session 3: | Parametric Modeling | |
| Session 4: | Spatial Coordination | Homework #1 |
| Session 5: | PART II: BIM Use Cases  
Roles & Responsibilities of Project Team Members | |
| Session 6: | BIM Workflow | |
| Session 7: | BIM Federated Models | Homework #2 |
| Session 8: | PART III: Advanced BIM Methods  
Design Integration: Architectural, Structural, and MEP | |
| Session 9: | Parametric modeling for cost estimating | |
| Session 10: | Planning, Coordination, and Scheduling | Homework #3 |
Session 11: PART VI: BIM Technology
Technology Overview & Definitions

Session 12: Software/Hardware Tools, File Formats

Session 13: Technology Selection

Session 14: BIM Execution Plan

Session 15: BIM Execution PlanHomework #4

Session 16: Mid-Term Exam

Session 17: PART V: BIM Contract Negotiation & Risk Allocation
Contract Negotiation, Contract Liabilities and Standard of Care

Session 18: BIM Execution Plan Contract Terms

Session 19: Model Intellectual Property Rights, Insurance, & Bonding IssuesHomework #5

Session 20: PART VI: BIM Process, Adoption, and Integration

Session 21: Project-Level BIM Implementation

Session 22: Project-Level BIM Implementation

Session 23: Case Study: Energy ModelingHomework #6

Session 24: Company-Level BIM Implementation

Session 25: Case Study: Facility Management

Session 26: Course Review/Course Evaluation

Session 27: Term Project Presentations

Session 28: Term Project Presentations

Session 29: Final Exam

VI. EXAMINATIONS AND GRADING

Homework 25%
Mid-Term Exam 20%
Final Exam 30%
Term Project 25%

LETTER GRADES: A = 90-100%, B = 80-90%, C = 70-79%, D = 60-69%, F = less than 60%