Construction safety management

# Instructor guide

Course duration if teaching with this material in class: ~5 hours, depending on lecture time

Recommended student level: Students in construction programs, 4-year and graduate level

Product: Autodesk Build

This instructor guide is a comprehensive tool for facilitating this course in the classroom. Prepare to teach the course by thoroughly reviewing this document, as well as all related course materials and resources. You may also share this document with your students to guide them in their assignments. It’s always recommended that you work through the course yourself in preparation for each module.

**Learning objectives:**

* Explain how Build enables better safety management through connected digital workflows.
* Demonstrate how to store and reference site specific safety plans in Build.
* Add safety instruction and markups to plan sheets.
* Create a digital jobsite Safety Data Sheet (SDS) book.
* Set up Build for incident tracking and safety inspections.
* Assign incidents to other team members for follow-up.
* Create safety permit forms in Build.
* Track safety permit activities from submittal through completion.

The overall course contains the following resources:

* Four video modules covering all the topics in the course.
* Dataset files for use when following the video modules.
* Quiz questions with timecodes for remedial knowledge check.
* Exam-style final test questions at the conclusion of the course.
* Four practice exercises with exercise files.
* One challenge assignment with recommended assessment criteria.
* Lecture slides that introduce topics and themes covered in the course.

**Course goals:**

Students will develop practical skills to manage job site safety in Autodesk Build. By the end of the course, they will be able to streamline safety oversight by digitizing typical safety management workflows and enabling the tracking of leading indicators that can help mitigate adverse incidents before they occur.

**Structure of the course:**

The course is split into 4 modules and is designed to cover construction management safety concepts and workflows in Build.

**Videos:**

Each video begins with a list of learning objectives covered in the video. The dataset mentioned throughout all the videos are available if students wish to follow along or practice after the video.

**Dataset:**

This course has one dataset folder including Revit files and PDF files for safety data sheets, plan sheets, and other documents.

**Practice exercises:**

There are 4 practice exercises included, each exploring a different set of topics. The practice exercises are designed to give students an opportunity to test their knowledge and apply what they have learned. The datasets from the course should be used in the exercises.

**Challenge exercise:**

One challenge assignment is included, focusing on a set of topics covered in the course. Students are presented with a challenge in an applicable real-world situation, and they apply their skills and the techniques learned to solve the challenge. A grading rubric is provided for the instructor, giving guidelines on assessment criteria. You can also encourage students to work in small groups, first discussing the desired outputs and working collectively to derive the best process and execution in the software.

**Video quiz questions:**

Quiz questions are included with each video of the course and the timecodes are included so that students can review the related sections in the video for questions they have answered incorrectly.

**Final test questions:**

A cumulative set of exam-style questions are included at the conclusion of the course for students to measure what they have learned against realistic multiple-choice questions.

**Lecture slides:**

Lecture slides are offered to help facilitate in-class discussion.

**Using the course in the classroom or self-paced**

The Construction safety management course can be implemented as an independent, self-paced project, or can be completed in the classroom in a team setting. A couple of options are outline below:

Option 1: Self-paced

Each student will log into Autodesk.com/learn using their Autodesk Account credentials and follow along with the project instruction. (Alternatively, you may choose to assign the material through your LMS). Students can work through the projects on their own by following the project steps and challenge instructions, and by exploring any supporting assets. This is a great way to allow students to move through the learning materials at their own pace and explore additional learning opportunities or increase shop time. The self-paced option can also be used for out of classroom or remote assignments. A certificate of completion is awarded once the course is completed.

Option 2: Instructor-led

In this option, instructors will log into Autodesk.com/learn using their Autodesk Account credentials and download the learning materials. Instructors can then guide the students through each project, using the accompanying lecture slides for instruction and step-by-step guides and practice exercises as handouts. This option allows for guided, step-by-step classroom engagement. This approach works well in a more traditional classroom setting and will allow instructors to easily keep students on the same pace. The challenge exercise can be used as a learning opportunity for students who complete their work early or are looking for additional hands-on opportunities.

Course contents

Each module is listed below along with suggested time allocations for instruction. Review the video tutorials for the detailed instruction in each module.

**Module 1-01 Why is safety important in construction?**

**Total time required for module:** 10 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Describe how safety, quality, and productivity are inextricably linked.
* Explain how promoting a safe and healthy work environment promotes mental wellbeing.
* Describe the concept of moving beyond "safety as an add-on" at the construction site.

**Hands-on time:** 0 minutes

**Review objectives:** 1 minute

**Datasets:** *NA*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 1-02 Digitize safety using Build**

**Total time required for module:** 10 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Explain how model coordination supports cost-effective problem solving and risk mitigation.
* Describe the purpose and common use of a BEP.

**Hands-on time:** 0 minutes

**Review objectives:** 1 minute

**Datasets:** *NA*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 1-03 Work with project settings and folders**

**Total time required for module:** 20 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Identify project settings the enable autofill of form fields.
* Enable autogenerated hyperlinks to sheets added in the Files tab.
* Add a document folder structure that enables the proper collection and storage of site-specific safety documents.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 1-04 Add models and plan sheets**

**Total time required for module:** 20 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Import a Revit file and use the built-in viewer to view the model in Build.
* Import and publish 2D plan sheets.
* Navigate plan sheets in Build.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 1-05 Create locations**

**Total time required for module:** 25 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Import existing Location Breakdown Structures from a Revit model.
* Manually add locations to the breakdown structure.
* Assign locations to areas on plan sheets in Build.

**Hands-on time:** 15 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Practice Exercise Module 1: Add locations to sheets:** 15 min
* **Quiz:** 2 minutes

**Module 2-01 Use site specific safety documents**

**Total time required for module:** 10 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Explain the difference between site specific safety plans and company safety manuals.
* Describe the role that a company safety manual plays in overseeing construction activities.
* Describe the role a site-specific safety plan plays in managing a job site.

**Hands-on time:** 0 minutes

**Review objectives:** 1 minute

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 2-02 Upload and access safety documents**

**Total time required for module:** 20 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Set file folder permissions.
* Upload project safety documents to Build.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 2-03 Share files out to external stakeholders**

**Total time required for module:** 20 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Enable public file and folder sharing.
* Share and revoke public links to files and folder.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Practice Exercise 1 Coordinate building information models:** 15 min
* **Quiz:** 2 minutes

**Module 2-04 Use Safety Data Sheets (SDS) in construction**

**Total time required for module:** 10 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Explain the importance of matching Safety Data Sheets to the actual product being used on the job site.
* Demonstrate how to find Personal Protective Equipment (PPE) requirements for each hazardous substance used on a project.
* Find recommended first aid steps to take in case of accidental exposure.
* Use SDSs to identify any special handling or storage requirements.

**Hands-on time:** 0 minutes

**Review objectives:** 1 minute

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 2-05 Upload, access, and link to Safety Data Sheets**

**Total time required for module:** 10 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Upload Safety Data Sheets to the proper folder structure so that team members all have access.
* Use search features to find information in the sheets.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 2-06 Add safety references to plan sheets**

**Total time required for module:** 30 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Add markups to the plan sheets related to site specific safety instructions.
* Add references to plan sheets and files to improve the flow of information.

**Hands-on time:** 20 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes
* **Quiz:** 2 minutes

**Module 2-07 Link safety documents and plan sheets**

**Total time required for module:** 25 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Add markups to documents stored in Files.
* Link document markups directly to plan sheets.
* Link markups in plan sheets back to documents.

**Hands-on time:** 15 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Practice Exercise Module 2: Add markups and hyperlinks to safety documents:** 15 min
* **Quiz:** 2 minutes

**Module 3-01 Use leading indicators in safety management**

**Total time required for module:** 10 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Define leading indicators.
* List several types of leading indicator data.
* Explain how aggregated leading indicator data can be used to proactively manage safety.

**Hands-on time:** 0 minutes

**Review objectives:** 1 minute

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 3-02 Add unsafe behavior issue types to Build**

**Total time required for module:** 20 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Use issue tracking to collect leading indicators.
* Create a new issue type and templates in Build.
* Create, assign, and track issues related to safety incidents.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 3-03 Record unsafe behaviors in the field**

**Total time required for module:** 20 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Use the mobile app to create an unsafe behavior observation on a plan sheet.
* Create an observation quickly from the mobile dashboard.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 3-04** **Work with collected leading indicator data**

**Total time required for module:** 20 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Demonstrate ways to view aggregated unsafe behavior observations in Build.
* Use the filters in the Issues tab to view selected data.
* Create a useful workflow for managing the leading indicator data.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 3-05 Create an incident report template**

**Total time required for module:** 25 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 10 minutes

* Create a new form template to collect incident data.
* Set up approval worfklows within a template.

**Hands-on time:** 15 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 3-06 Track safety incidents**

**Total time required for module:** 30 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Create a Safety Incident Report form.
* Attach an incident report to an Issue pin on a plan sheet.
* Begin a new form while creating an Issue on a plan sheet.

**Hands-on time:** 20 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Practice Exercise Module 2: Add markups and hyperlinks to safety documents:** 15 min
* **Quiz:** 2 minutes

**Module 4-01 Use the sample daily safety inspection template**

**Total time required for module:** 20 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Demonstrate how to use existing templates to create forms.
* Export a completed form to a PDF that can shared with others.

**Hands-on time:** 10 minutes

**Review objectives:** 1 minute

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 4-02 Create a new daily safety inspection template**

**Total time required for module:** 30 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Build a new form template.
* Complete a safety inspection form from the new template.
* Export data collected in the safety inspection form to a spreadsheet format.

**Hands-on time:** 20 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 4-03 Use safety permits on a construction site**

**Total time required for module:** 8 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 5 minutes

* Explain the use of safety permit forms on a construction site.
* List examples of common types of safety permits used in construction.

**Hands-on time:** 0 minutes

**Review objectives:** 1 minute

**Assignments (additional):**

* **Quiz:** 2 minutes

**Module 2-04 Create a safety permit from an existing smart PDF form**

**Total time required for module:** 10 minutes

**Discuss objectives:** 1 minute

**Demonstrate:** 8 minutes

* Convert an existing PDF safety permit into a form template in Build.
* Add approval fields to the template.
* Create an approval workflow for the safety permit.

**Hands-on time:** 0 minutes

**Review objectives:** 1 minute

**Datasets:** *Files can be found in the Course Downloads zip file*

**Assignments (additional):**

* **Practice Exercise Module 4: Work with forms and templates:** 15 min
* **Quiz:** 2 minutes

***Next steps: End of course (additional)***

**Challenge exercise –** **Add safety information, issues, and templates:** 60 minutes

**Datasets: Datasets:** *Files can be found in the Course Downloads zip file*

**End-of-course exam questions:** 15 minutes

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