STUDENT LEARNING OUTCOMES – ASSESSMENT METHODS REPORT

CONSTRUCTION MANAGEMENT DEPARTMENT

BOWLING GREEN STATE UNIVERSITY REVISED: OCT 2022

Revised: Fall 2022

Introduction:
The purpose of this report is to summarize the direct assessment tools associated with each of the twenty Student Learning Outcomes (SLOs).

SLO 1 – Create written communications appropriate to the construction discipline.

Course Direct Assessment:	CONS 3590 – Estimating and Cost Control
SLO Assessment Cycle:	Year 2
Direct Assessment Tool:	CONS 3590 – Scope of Work Letter Assignment
Assessment Goal:	70% of students obtain 70% or higher

Summary of the Direct Assessment Tool:

The assessment tool is the Scope of Work Letter assignment in CONS 3590. The students are required to write a proposal letter to the owner. The assignment is based upon the set of plans used for the final project. The letter consists of an opening paragraph and company qualifications. The letter then includes a detailed scope of work written using the CSI division format. The letter continues with the price, and a closing paragraph.

SLO 2 – Create oral presentations appropriate to the construction discipline.

Course Direct Assessment:	CONS 4700 – Construction Capstone
SLO Assessment Cycle:	Year 2
Direct Assessment Tool:	Project Presentation
Assessment Goal:	70% of students obtain 70% or higher

Summary of the Direct Assessment Tool:

The assessment tool is the final project presentation in CONS 4700. The panel defense is an oral presentation of a small group project-based assignment (PBA) meant to simulate real world conditions. Students form their own groups and select their own project from an electronic plan room (Ohio Builders Exchange). While this is a group project, students are graded individually based upon their contribution to the presentation.

SLO 3 – Create a construction project safety plan.

Course Direct Assessment:	CONS 4110 – Safety/Health Management
SLO Assessment Cycle:	Year 1
Direct Assessment Tool:	Health and Safety Plan Assignment
Assessment Goal:	70% of students obtain 70% or higher

Summary of the Direct Assessment Tool:

The assessment tool is the Health and Safety Plan assignment in CONS 4110. The students are given a project scenario. They are required to create and submit a written job specific construction safety and health plan. The safety plan addresses work practices and procedures designed to protect employees and the general public from hazards associated with the work described in the project scenario.

SLO 4 – Create Construction Cost Estimates.

Course Direct Assessment:	CONS 3590 – Estimating and Cost Control
SLO Assessment Cycle:	Year 1
Direct Assessment Tool:	Final Project
Assessment Goal:	70% of students obtain 70% or higher

Summary of the Direct Assessment Tool:

The assessment tool is the final project in CONS 3590. The students receive an Excel template for creating the summary pages, as well as excel worksheets for the activities. The students are responsible for quantifying the "self-performed" work of the project. This includes site demolition, site work, site utilities, concrete, carpentry, and metal roofing and siding. The students are given a list of resources, which include labor, equipment and material pricing. From what they have learned in class, the student must create the crew composition and determine the crew efficiency for the self-performed activities. The students are given subcontractor pricing to complete the estimate.

Three courses within the curriculum have been re-sequenced and reworked to better prepare students for estimating. The three courses taken in sequence include, CONS 2590 Document Reading, CONS 3590 Estimating and Cost Control, and CONS 4590 Construction Estimating Computer Applications.

SLO 5 – Create construction project schedules.

Course Direct Assessment:	CONS 4420 - Construction Scheduling
SLO Assessment Cycle:	Year 3
Direct Assessment Tool:	CONS 4420 – Test 1
Assessment Goal:	70% of students obtain 70% or higher

Summary of the Direct Assessment Tool:

The assessment tool is TEST 1in CONS 4420, which covers the creation of the construction project schedule using the Critical Path Method and Precedence Diagram Method. The students

are tested on how to create the schedule for the project and use it to manage and coordinate the various trades crews and subcontractors on the project.

SLO 6 – Analyze Professional Decisions Based on Ethical Principles.

Course Direct Assessment: CONS 4400 – Construction Contracting
SLO Assessment Cycle: Year 1
Direct Assessment Tool: CONS 4400 – Quiz
Assessment Goal: 70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool is an ethics quiz taken in CONS 4400. Students take a 62 question quiz which covers a wide variety of ethical questions and situations.

SLO 7 – Analyze construction documents for planning and management of construction processes.

Course Direct Assessment: CONS 2590 - Construction Document Reading
SLO Assessment Cycle: Year 2
Direct Assessment Tool: CONS 2590 – Final Exam
Assessment Goal: 70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool is the Final Exam in CONS 2590. The students are given a set of plans and specifications. Students must review the plans and specifications to find the information necessary to answer the exam questions.

SLO 8 – Analyze methods, materials, and equipment used to construct projects.

Course Direct Assessment: CONS 4350 - Construction Methods and Practices
SLO Assessment Cycle: Year 3
Direct Assessment Tool: CONS 4350 – Test 1 and Test 2
Assessment Goal: 70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool is the combined scores of Test 1 and Test 2 in CONS 4350. Test 1 incorporates chapters 1 and 13 and consists of 270 true/false or multiple choice questions. Test 2 incorporates chapters 2 thru 7 and consists of 596 true/false or multiple choice questions.

SLO 9 – Apply construction management skills as a member of a multidisciplinary team.

Course Direct Assessment: CONS 4700 - Construction Capstone
SLO Assessment Cycle: Year 2
Direct Assessment Tool: Capstone Group Project
Assessment Goal: 70% of students obtain 70% or higher

Summary of the Direct Assessment Tool:

The assessment tool is a group project in CONS 4700. Students are formed into groups based on their prior experience and interests to collective develop a project work plan, construction schedule, cost estimates, risk analysis for a real-world project-based assignment. Each group is assigned a specific project which has recently been completed. Group submission includes a hard copy submission and an oral presentation. The assignment is assessed based on its level of detail, technical accuracy and quality of presentation.

SLO 10 – Apply electronic-based technology to manage the construction process.

Course Direct Assessment: CONS 4590 – Construction Estimating Computer Applications
SLO Assessment Cycle: Year 3
Direct Assessment Tool: OANG Project – Concrete Estimate
Assessment Goal: 70% of students obtain 70% or higher

Summary of the Direct Assessment Tool:

The assessment tool is the Ohio Air National Guard Project in CONS 4590. The project consists of a new jet hangar and associated concrete pavement. A complete estimate of interior and exterior concrete is performed using BlueBeam for quantity take-off and then priced using Sage Timberline.

SLO 11 – Apply basic surveying techniques for construction layout and control.

Course Direct Assessment: CONS 3180 – Construction Surveying
SLO Assessment Cycle: Year 1
Direct Assessment Tool: Final Exam
Assessment Goal: 70% of students obtain 70% or higher

Summary of the Direct Assessment Tool:

The assessment tool is the Final Exam in CONS 3180. In the Final Exam, the students must demonstrate their ability to perform all calculations necessary to solve the surveying problems.

SLO 12 – Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.

Course Direct Assessment: CONS 4400 - Construction Contracting
SLO Assessment Cycle: Year 2
Direct Assessment Tool: CONS 4400 – Quizzes from Chapters 1 and 4
Assessment Goal: 70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool are quizzes from chapters 1 and 4 in CONS 4400. Chapter 1 cover the introduction to the Construction Industry which incorporate the construction management cycle, stages/phases of the construction project, construction project delivery systems, the players on a typical construction project and their duties and responsibilities, the patterns of communication among these players. Chapter 1 quiz is 184 true/false or multiple choice questions.

Chapter 4 covers the Project Design and Contract and Bid Documents for a Project which incorporates an expansion on the project procurement/contracting methods along with the involved players and their duties and responsibilities. The chapter also expands on the bidding and contract documents and their function. Chapter 4 quiz is 162 true/false or multiple choice questions.

SLO 13 – Understand Construction Risk Management.

Course Direct Assessment: CONS 4400 – Construction Contracting
SLO Assessment Cycle: Year 1
Direct Assessment Tools: Two quizzes
Assessment Goal: 70% of students obtain 70% or higher, or as noted.

Summary of the Direct Assessment Tools:

Quizzes for US CORPS OF ENGINEERS RISK MANAGEMENT MODEL (8930519) and Risk Management Matrix (9094086)

This part covers why the construction business is a risk prone business, what is risk, the 7 steps to analyze and manage risk, the risk matrix along with the recommended risk management responses, the use of contract as risk management tool, and how the standard contract forms reduce risk for all parties.

The US Corps of Engineers engages in projects with an extreme impact if failure happens. The Corps developed the Risk Management Model that perform two functions for me in this class: example of risk application and education about the module itself.

The Risk Management Matrix quiz consists of 60 true/false or multiple choice questions. The Risk Management Model quiz consists of 54 true/false or multiple choice questions.

SLO 14 – Understand construction accounting and cost control.

Course Direct Assessment:	CONS 4590 - Construction Estimating Computer Applications
SLO Assessment Cycle:	Year 2
Direct Assessment Tool:	CONS 4590 – Cost To Date Report
Assessment Goal:	70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool is a two part assignment in CONS 4590 in which the students are first given a partial "Cost to Date" report. The students must perform calculations to determine "Units at Completion, Cost to Finish, Completion Cost and Projected Gain/Loss", for activities found on the report. There are also a series of questions based upon the analysis of the information provided within the report. The second part is the students take a simple estimate and break it down into cost codes, using company standard codes and spreadsheet.

SLO 15 – Understand construction quality assurance and control.

Course Direct Assessment:	CONS 3350 - Construction Materials and Testing
SLO Assessment Cycle:	Year 3
Direct Assessment Tool:	CONS 3350 – Final Exam
Assessment Goal:	70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool is the final exam in CONS 3350. This exam includes questions pertaining to the quality assurance for soils, concrete and asphalt, as well as masonry and structural steel. The exam also includes questions pertaining to the appropriate means and methods for earthwork and concrete placement.

SLO 16 – Understand construction project control processes.

Course Direct Assessment:	CONS 4420 - Construction Scheduling
SLO Assessment Cycle:	Year 3
Direct Assessment Tool:	CONS 4420 – Cost Loaded Schedule Assignment
Assessment Goal:	70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool is updating the construction schedule in CONS 4420. This includes taking corrective actions if the project is behind schedule/resource usage/over budget. The student generates a baseline schedule using the provided activities, develop a form for collecting field data, update the schedule based on the collected field information, evaluate and identify the behind schedule activities, investigate causes, and recommend corrective actions. In the final part of this assignment, the student generates an updated schedule based upon a defined calendar day.

SLO 17 – Understand the legal implications of contract, common, and regulatory law to manage a construction project.

Course Direct Assessment:	CONS 4400 - Construction Contracting
SLO Assessment Cycle:	Year 1
Direct Assessment Tool:	CONS 4400 – Multiple Assignments
Assessment Goal:	70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

2DBIA Contracts and Risk Management Part 1 (9160239)
2DBIA Contracts and Risk Management Part 2 (9160311)
RESOLUTION OF CONSTRUCTION DISPUTES (8930530)
Chapter 6 Construction Contract Provisions (8930525)

The first two assignments cover the Part 2 Principles of Design Build Delivery and Procurement and Part 3 Contracts and Risk Management of the certification workshop of the Design Build Institute of America. The fourth one covers critical Construction Contract Provisions that the PM should focus on and the third one covers ways to avoid contractual disputes on construction projects, and, if they are unavoidable, it covers ways to manage them and reach a resolution to these disputes.

SLO 18 – Understand the basic principles of sustainable construction.

Course Direct Assessment:	CONS 2350 - Introduction to Construction CONS 4000 – LEED and Lean Fundamentals
SLO Assessment Cycle:	Year 1
Direct Assessment Tool:	CONS 2350 - Test 2 – Extracted Questions CONS 4000 – Midterm Examination, (spring 2023)
Assessment Goal:	70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool is extracted questions of Test #2 in CONS 2350. These questions test the students' knowledge of sustainability as presented in the course text and course lectures.
As an introduction to the topic, two additional lectures have been added to CONS 2350 Introduction to Construction and the topic is evaluated in both the first and final examinations for the course.
After the 2017 accreditation visit, it was determined that the CONS 4000 LEED and Lean Fundamentals course would become a core class in the CONS curriculum. It was determined that this SLO will be evaluated in CONS 4000, LEED and Lean Fundamentals, beginning with the spring 2023 semester, (course not offered in fall 2022)

SLO 19 – Understand the basic principles of structural behavior.

Course Direct Assessment:	CONS 3360 - Structural Design
SLO Assessment Cycle:	Year 3
Direct Assessment Tool:	CONS 3360 – Final Exam
Assessment Goal:	70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

The assessment tool is the Final Exam for CONS 3360. The students are given a comprehensive examination at the end of the semester which includes the following components: statics, vectors, beam design, truss design, axial loading and design of timber members.

SLO 20 – Understand the basic principles of mechanical, electrical and piping systems.

Course Direct Assessment:	CONS 3370 – Mechanical, Electrical and Plumbing Systems in Buildings
SLO Assessment Cycle:	Year 2
Direct Assessment Tool:	CONS 3370 – Final Exam
Assessment Goal:	70% of students obtain 70% or higher, or as noted

Summary of the Direct Assessment Tool:

CONS 3370 provides an overview of the technical principles, methods, materials and problems encountered in installing these systems sufficient to manage the work, as well as scheduling and estimating aspects of the MEP systems. The final exam for this course is offered as a comprehensive gauge of the students' understanding of the basic principles of mechanical, electrical and piping systems.