Construction Engineering Technology
Mississippi Curriculum Framework

Program CIP: 15.1001 – Construction Engineering Technology/Technician (Project Manager)

2022

Published by:
Mississippi Community College Board
Division of Workforce, Career, and Technical Education
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The Office of Curriculum and Instruction (OCI) was founded in 2013 under the Division of Workforce, Career, and Technical Education at the Mississippi Community College Board (MCCB). The office is funded through a partnership with The Mississippi Department of Education (MDE), who serves as Mississippi's fiscal agent for state and federal Career and Technical Education (CTE) Funds. The OCI is tasked with developing statewide CTE curriculum, programming, and professional development designed to meet the local and statewide economic demand.

For information, please contact curriculum@mccb.edu

CONTENTS

Research Abstract

The curriculum framework in this document reflects the changes in the workplace and a number of other factors that impact local vocational–technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

In the spring of 2022, the Office of Curriculum and Instruction (OCI) met with different administrators and instructors in the southern and northern region of Mississippi. Program faculty, administrators, and industry members were consulted regarding industry workforce needs and trends. Advisory team members from colleges involved with this program were asked to give input related to changes to be made to the curriculum framework.

Revision History

2009-Research & Curriculum Unit, Mississippi State University
2016-Office of Curriculum & Instruction, Mississippi Community College Board
2022-Office of Curriculum & Instruction, Mississippi Community College Board

ADOPTION OF NATIONAL CERTIFICATION STANDARDS

The **National Center for Construction Education and Research (NCCER)** is a not-for-profit 501(c)(3) Education foundation created in 1996. It was developed with the support of more than 125 construction CEOs and various association and academic leaders who united to revolutionize training for the construction industry. Sharing the common goal of developing a safe and productive workforce, these companies created a standardized training and credentialing program for the industry. This progressive program has evolved into curricula for more than 70 craft areas and a complete series of more than 70 assessments offered in over 4,000 NCCER-accredited training and assessment locations across the United States.

NCCER develops standardized construction and maintenance curricula and assessments with portable credentials. These credentials are tracked through NCCER's National Registry which allows organizations and companies to track the qualifications of their craft professionals and/or check the qualifications of possible new hires. The National Registry also assists craft professionals by maintaining their records in a secure database.

NCCER's process of accreditation, instructor certification, standardized curriculum, national registry, assessment, and certification is a key component in the industry's workforce development efforts. NCCER also drives multiple initiatives to enhance career development and recruitment efforts for the industry. NCCER is headquartered in Alachua, Fl., and is affiliated with the University of Florida's M.E. Rinker, Sr. School of Building Construction.

As the accrediting body for the industry, NCCER establishes the benchmark for quality training and assessments. By partnering with industry and academia, NCCER has developed a system for program accreditation that is similar to those found in institutions of higher learning. This process fosters national unity among the construction industry while providing a defined career path with industry-recognized credentials.

NCCER's accreditation process assures that students and craft professionals receive quality training based on uniform standards and criteria. These standards are outlined in the NCCER Accreditation Guidelines and must be adhered to by all NCCER Accredited Training Sponsors and Accredited Assessment Centers.

For more information related to implementing NCCER at your local campus, please visit:

http://www.nccer.org

Office Proficiency Assessment & Certification

OPAC® is a product of a larger organization (Biddle Consulting Group, Inc.) established in 1974. Biddle Consulting Group is a human resources consulting firm specializing in Equal Employment Opportunity, litigation support, affirmative action, test validation and development, and cutting-edge software. Their company provides consulting services and software that assists their clients, their company, and the industry they serve.

OPAC® software measures critical skills and abilities required in today's administrative and clerical positions. OPAC® validated tests includes software exams in all of the MS Office word processing, spreadsheet, and database applications, including Microsoft Word, Excel, PowerPoint and Access. Office skills tests include keyboarding, proofreading, data entry, and transcription. The program also provides specialized assessments for the legal, medical, and customer service fields.

Educators are using OPAC® for pre-testing and post-testing business education and office education students. Others are using it as an exit exam and offering OPAC® certificates upon completion. Since the software measures critical skills & abilities, it is an ideal certification and testing solution for business office education and career development programs.

For more information related to OPAC®, please visit https://www.opac.com/index.html.

INDUSTRY JOB PROJECTION DATA

A summary of occupational data is available from the Mississippi Department of Employment Security.

https://mdes.ms.gov/information-center/labor-market-information/

Standard Occupational Classification (SOC)		2016 Employment	2026 Projected Employment	Projected Employment Growth 2016-2026		Total Projected Avg. Annual Job Openings
SOC Code	Occupation			Number	Percent	
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	5180	5620	440	8.5	605

ARTICULATION

Articulation credit from Secondary Contren Learning Series programs to Postsecondary Construction Engineering Technology will be awarded upon implementation of this curriculum by the college. The course to be articulated is Fundamentals of Survey of Modern Construction (CON 1113), with the stipulations of passing the MS-CPAS2 according to MCCB guidelines and Contren Learning Series Core Certification.

SEC Program	PS Program	PS Courses
Secondary CONTREN Learning Series programs • S Building Trades (CIP 46.0000) • S Electrician (CIP 46.0302) • S Heating and Air Conditioning (CIP 47.0201) • S Industrial Maintenance Trades (CIP 47.0303) • S Masonry (CIP 46.0101) • S Metal Trades (CIP: 48.0590) • S Welding Theory and Applications (CIP 48.0508)	PS Construction Engineering Technology (CIP 15.1001)	CON 1113– Fundamentals of Survey of Modern Construction

TECHNICAL SKILLS ASSESSMENT

CIP Code	Program of Study
15.1001	**Construction Engineering Technology**
Level	**Assessment**
Accelerated /15 Hour	
Level	**Assessment**
Career	NCCER Core Exam OPAC Excel® Basic or MOS MS Excel®
Level	**Assessment**
Technical/AAS	NCCER Project Management Exam NCCER Project Supervision Exam OPAC Excel® Intermediate or MOS MS Excel®

Certification and Licensure Prices:

NCCER Core, Project Management, Project Supervision	Contact NCCER for licensure prices for each assessment

PROGRAM DESCRIPTION

The Construction Engineering Technology (CON) program is an instructional program designed to prepare technicians for employment within the construction industries and firms in mid-level management operations as estimators, planners, project managers, layout specialists, or other construction operations. Individuals currently employed as professionals will enhance their ability to perform their duties in the construction business.

This curriculum leads to an Associate of Applied Science degree. Students completing the program will be prepared for jobs in supervision, estimating, layout, cost control, materials procurement, safety, leadership, and organization of construction projects. In the program, students learn workplace environmental and safety issues. They also learn how to identify safety hazards and notify the proper authorities.

Certifications and/or training can include:

- National Center for Construction Education and Research (NCCER)
- OSHA 10-hr and/or 30-hr training
- Competent Person Training in Excavations
- Competent Person Training in Confined Spaces
- American Concrete Institute grade 1 testing certificate
- Quality Control in Army Corp of Engineers

This curriculum has been aligned to modules in the Contren program as endorsed by the National Center for Construction Education and Research (NCCER). Students who study this curriculum using the Contren materials under the supervision of an instructor who has been certified by the NCCER are eligible to be tested on each module. Students who successfully pass these tests may be certified to the NCCER by the instructor and will receive documentation from NCCER.

SUGGESTED COURSE SEQUENCE

Accelerated Pathway Credential

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
CON 1113	Survey of Modern Construction	3	2	2		60	30	
CON 1213	Construction Materials	3	2	2		60	30	
	Instructor Approved Electives per Local Community College	9						
	Total	**15**						

Career Certificate Required Courses

			SCH Breakdown				Contact Hour Breakdown			Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical/ Internship	Total Contact Hours	Lecture	Lab	Clinical/ Internship	Certification Name
CON 1113	Survey of Modern Construction	3	2	2		60	30	30		
CON 1213	Construction Materials	3	2	2		60	30	30		
CON 1223	Plans and Document Interpretation	3	2	2		60	30	30		
CON 1233	Construction Systems I	3	2	2		60	30	30		
	Instructor Approved Electives per Local Community College	18								
	TOTAL	**30**								

Technical Certificate Required Courses

			SCH Breakdown				Contact Hour Breakdown			Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical/ Internship	Total Contact Hours	Lecture	Lab	Clinical/ Internship	Certification Name
CON 2313	Construction Layout	3	2	2		60	30	30		-OSHA 30 –only a cert offered to students, no assessment
CON 2123	Construction Cost Estimation	3	2	2		60	30	30		
CON 2113	Construction Job Site Management	3	2	2		60	30	30		
CON 2413	Construction Safety Standards	3	2	2		60	30	30		
CON 2513	Leadership and Organization	3	2	2		60	30	30		
	Total	**15**								

General Education Core Courses

To receive the Associate of Applied Science degree, a student must complete all of the required coursework found in the Career Certificate option, Technical certificate option, and a minimum of 15 semester hours of General Education core. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester or provided primarily within the last semester. Each community college will specify the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science degree at their college. The Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) Section 9 Standard 3 of the *Principles of Accreditation: Foundations for Quality Enhancement*[1] describes the general education core.

Section 9 Standard 3:

3. The institution requires the successful completion of a general education component at the undergraduate level that

   a) is based on a coherent rationale.

   b) is a substantial component of each undergraduate degree program. For degree completion in associate programs, the component constitutes a minimum of 15 semester hours of the equivalent; for baccalaureate programs, a minimum of 30 semester hours or the equivalent.

   c) ensures breadth of knowledge. These credit hours include at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural science/mathematics. These courses do not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession.

General Education Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
	Humanities/Fine Arts	3						
	Social/Behavioral Sciences	3						
	Math/Science	3						
	Academic electives	6						
	TOTAL	**15**						

***Construction Engineering Technology students are encouraged to take MAT 1313 College Algebra, MAT 1323 Trigonometry, and PHY 2414 Physics I to be better prepared for advanced coursework and employability.**

[1] Southern Association of Colleges and Schools Commission on Colleges. (2017). *The Principles of Accreditation: Foundations for Quality Enhancement*. Retrieved from http://www.sacscoc.org/2017ProposedPrinc/Proposed%20Principles%20Adopted%20by%20BOT.pdf

Electives

			SCH Breakdown				Contact Hour Breakdown			Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical/ Internship	Total Contact Hours	Lecture	Lab	Clinical/ Internship	Certification Name
CON 1313	Construction Drawing	3	2	2		60	30	30		
CTE 1143	NCCER Core	3	2	2		60	30	30		
CON 1113	Survey of Modern Construction	3	2	2		60	30	30		
CON 1213	Construction Materials	3	2	2		60	30	30		
CON 1223	Plans and Document Interpretation	3	2	2		60	30	30		
CON 1233	Construction Systems I	3	2	2		60	30	30		
CON 261(3–6)	Internship in Construction Engineering Technology	3-6			3-6	135-270			135-270	
CON 262(3–6)	Internship in Construction Engineering Technology	3-6			3-6	135-270			135-270	
CON 2313	Construction Layout	3	2	2		60	30	30		
CON 2123	Construction Cost Estimation	3	2	2		60	30	30		
CON 2233	Construction Systems II	3	2	2		60	30	30		
CON 2113	Construction Job Site Management	3	2	2		60	30	30		
CON 2413	Construction Safety Standards	3	2	2		60	30	30		
CON 2513	Leadership and Organization	3	2	2		60	30	30		
CON 2523	Project Management	3	2	2		60	30	30		
BAD 2413	Legal Environment of Business	3	3			45	45			
DDT 1313	Principles of CAD	3	3			45	45			
DDT 1413	Computer Aided Design I	3	2	2		60	30	30		
DDT 1423	Computer Aided Design II	3	3			45	45			
DDT 2153	Civil Planning and Design	3	1	4		75	15	60		
CON 291(1–3)	Special Problem in Construction Engineering Technology	1-3		2-6		30-90		30-90		
CON 292(1–6)	Supervised Work Experience in Construction Engineering Technology	1-6			3-18	45-270			45-270	

CPT 1113	Fundamentals of Microcomputer Applications	3	3			45	45			
CSC 1113	Introduction to Computer Concepts	3	3			45	45			
ACC 1213	Principles of Accounting I	3	3			45	45			
CON 2243	Construction Systems III	3	2	2		60	30	30		
DDT 2253	Statics and Strength of Materials	3	3			45	45			
DDT 1613	Architectural Design I	3	3			45	45			
DDT 1163	Engineering Graphics	3	2	2		60	30	30		
WBL 191(1-3) WBL 192(1-3) WBL 193(1-3) WBL 291(1-3) WBL 292(1-3) WBL 293(1-3)	Work-Based Learning	1-6			3-18	45-270			45-270	
IMM 1935	Manufacturing Skills Basic	5	2	6		120	30	90		
DDT 2823	Revit Architectural 3-D Modeling	3	1 *OR* 2	4 *OR* 2		75 *OR* 60	15 *OR* 30	60 *OR* 30		
SSP 100(2-3)	Smart Start 101	2-3								
	Instructor Approved Electives per Local Community College									

CONSTRUCTION ENGINEERING TECHNOLOGY COURSES

Course Number and Name: **CON 1113 Survey of Modern Construction**

Description: Fundamentals of the construction environment, methods, materials, and processes from a historical perspective, and the impact on the construction industry.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Interpret the importance of the construction industry.
2. Recognize the major historical advancements in the construction industry. **MODULE 44101-08**
3. Examine the influence of construction technology. **MODULE MT201**
    a. Describe the advancements in construction equipment.
    b. Discuss the significance of GPS technology in the construction industry.
    c. Explain the major technological advances in materials.

NCCER Standards

Project Management
MODULE 44101-08 – INTRODUCTION TO PROJECT MANAGEMENT

Project Supervision
MODULE MT201 – ORIENTATION TO THE JOB

Course Number and Name: **CON 1213 Construction Materials**

Description: This is a course designed to provide a study and testing of the various materials used in the construction industry including wood, steel, concrete, and soils.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Describe how soil relates to construction.
    a. Describe the various machine applications.
    b. Visually classify soils.
    c. Perform a standard proctor soils test.

2. Explain the properties, placement, and tests for concrete. **Concrete Field Testing Grade I Certification Training**
    a. Describe various engineering tests including slump, compression, and air content to determine strength requirements.
    b. Explain placing requirements for cold and hot weather, underwater, and vertical fall.
    c. Compare different types of forming systems to include reusable metal form, metal form, tilt-up form, and earthen formwork.
    d. Discuss admixtures for Portland cement concrete.

3. Compare the different properties and uses of wood as a building material. **Module 00109-15**
    a. Explore treated wood and polymerized components.
    b. Discuss dimension lumber and sawing techniques.
    c. Examine types and grades of wood.
    d. Describe the methods of wood protection against environmental decomposition and pest invasion.

4. Describe the uses of steel as a building component.
    a. Discuss the basic manufacturing process of making steel.
    b. Identify the basic steel shapes used in construction.
    c. Explain manufactured steel truss, beams, and rigid frame design.
    d. Examine the various types of connections used in steel construction.
    e. Differentiate between the various types of steel protective coatings.

NCCER Standards

Core
Module 00109-15 – Introduction to Material Handling

American Concrete Institute Grade 1 Testing Certificate
Concrete Field Testing Grade I Certification Training –

Course Number and Name: **CON 1223 Plans and Document Interpretation**

Description: This is a course designed to provide graphic techniques used in the construction industry. This course includes computation of areas and volumes, interpretation of construction plans and specifications, and symbols and terms used in the residential, commercial, and heavy construction industry.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Interpret construction prints. **Module 00105-15**
    a. Read and interpret typical construction blueprints.
    b. Read and interpret symbols, layout, and organizations of plans.
    c. Identify terms as related to construction prints.

2. Recognize construction plans as contract documents. **MODULE 44105-08**
    a. Using a site plan, determine if the amount of dirt to be moved will balance.
    b. Explain the technical specifications as per construction plans.
    c. Identify quantities from plans and obtain volumes and areas for concrete, coatings, and so forth.

3. Interpret specifications. **MODULE MT205**
    a. Identify the basic specifications of a contract document.
    b. Explain the specifications as they relate to money.

NCCER Standards

Core
Module 00105-15 – Introduction to Construction Drawings

Project Management
MODULE 44105-08 – CONSTRUCTION DOCUMENTS

Project Supervision
MODULE MT205 – CONTRACT AND CONSTRUCTION DOCUMENTS

Course Number and Name: **CON 1233 Construction Systems I**

Description: This is a course designed to provide a study of common practices of engineering principles and construction methods.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Explain the different types of residential, commercial, and heavy construction.
    a. Describe the construction applications of wood and steel.
    b. Identify the major tools and machinery required for residential, commercial, and heavy construction including the safe use of each.

2. Identify various types of foundations.
    a. Identify the various types of foundation materials.
    b. Describe problems encountered in regard to water and poor soil.

3. Identify different types of wall and roofing systems.
    a. Identify tilt-up practices.
    b. Identify prefab applications.
    c. Identify various roofing systems.

4. Describe money as a function of capital.
    a. Calculate money as a function of time.
    b. Demonstrate a profit and loss balance sheet.
    c. Explain owning and operating costs.

5. Describe machinery production.
    a. Read tabulated data to determine cycle times.
    b. Use the cycle times to determine the most efficient choice.

Course Number and Name: **CON 1313 Construction Drawing**

Description: This course is designed to give construction students the background needed for understanding and interpreting construction drawings.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Discuss classroom procedures and drafting occupations.
    a. Describe proper lab procedures.
    b. Describe various occupations in drafting and their requirements.

2. Demonstrate the ability to apply proper techniques in technical drawing.
    a. Demonstrate the ability to develop sketches and scale drawings.
    b. Construct various angles.
    c. Use perspective for a more detailed drawing.

3. Demonstrate the ability to use the basic hardware of the CAD system.
    a. Input data using keyboard and graphics tablet.
    b. Access files and/or symbols from the hard drive.
    c. Store, retrieve, copy, and delete drawings and files.

4. Demonstrate the ability to perform drafting functions on the CAD system.
    a. Construct a single view drawing.
    b. Modify/edit an existing drawing.
    c. Modify the existing system variables.

5. Demonstrate the ability to develop a three-dimensional model.
    a. Describe the model as an X, Y, and Z axis function.
    b. Construct a plane by entering coordinate points.
    c. Describe templates and layers.
    d. Demonstrate the TIN process.
    e. Demonstrate volume calculations by layering.

Course Number and Name: **CON 2113 Construction Jobsite Management**

Description: This is a course designed to provide a study of basic techniques of the modern methods of managing construction projects including scheduling, resource allocation, and funds flow. Practical applications are made through simulated projects.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Describe the factors to be considered by reviewing contract documents. **MODULE 44101-08, MODULE 44105-08**
    a. Describe construction equipment availability.
    b. Develop a submittal registry. **OPAC-Excel Basic**
    c. Using the Internet, obtain information that will be used for submittal entries.
    d. Develop material for a technical specification and submit for approval.
    e. Describe the availability of subcontractors.
    f. Examine a subcontract.
    g. Describe what a change order is and the role of a supervisor in its implementation.
    h. Demonstrate how a pay request is developed.
    i. Refer to EPA regulations and identify storm water run-off and permit requirements.

2. Explain how to sequence job functions using manual and scheduling software processes. **MODULE 44106-08, MODULE 44109-08, MODULE 44108-08, MODULE MT204, MODULE MT207, MODULE MT208**
    a. Interpret bar charts. **OPAC-Excel Basic**
    b. Explain construction activities and how they relate to the construction schedule.
    c. Demonstrate the process of cash flow and the management of cost projections.
    d. Develop a job schedule using appropriate scheduling software. **OPAC-Excel Basic**
    e. Demonstrate the process of maintaining daily logs.

NCCER Standards

Project Management
MODULE 44101-08 – INTRODUCTION TO PROJECT MANAGEMENT
MODULE 44106-08 – CONSTRUCTION PLANNING
MODULE 44109-08 – RESOURCE CONTROL
MODULE 44105-08 – CONSTRUCTION DOCUMENTS
MODULE 44108-08 – SCHEDULING
MODULE 44110-08 – QUALITY CONTROL AND ASSURANCE

Project Supervision
MODULE MT204 – QUALITY CONTROL
MODULE MT207 – PLANNING AND SCHEDULING
MODULE MT208 – RESOURCE CONTROL AND COST AWARENESS

OPAC-Excel Basic

Course Number and Name: **CON 2123 Construction Cost Estimation**

Description: This is a course designed to provide a study of the estimating, quantity survey, unit cost synthesis and analysis, bid organization and planning, and competitive simulations and exercises.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Student Learning Outcomes:

1. Examine the unique role of construction in today's business and industry. **MODULE 44107-08**
    a. Describe the different types of bids.
    b. Discuss the contents of contract documents.
    c. Explain the economics and requirements of the bidding process.

2. Explain the overhead costs.
    a. Define the various overhead costs of a company.
    b. Demonstrate the ways of returning overhead costs in the bid.
    c. Describe the effects of overhead costs related to volume of work and profit.

3. Explain direct costs of materials, labor, and equipment of a contract.
    a. Describe the relationship of material, labor, and equipment to each other.
    b. Demonstrate how these costs may be returned in the contract.
    c. Describe absorbed costs of a contract.

4. Develop a simulated construction bid. **MODULE MT206**
    a. Prepare a materials estimate for a construction bid. **OPAC-Excel Basic**
    b. Prepare a labor estimate for a construction bid. **OPAC-Excel Basic**
    c. Prepare an equipment estimate for a construction bid. **OPAC-Excel Basic**

NCCER Standards

Project Management
MODULE 44107-08 – ESTIMATING AND COST CONTROL

Project Supervision
MODULE MT206 – DOCUMENT CONTROL AND ESTIMATING

OPAC-Excel Basic

Course Number and Name: **CON 2233 Construction Systems II**

Description: This is a course designed to provide common practices of construction using engineering techniques to determine relations between equipment production and design criteria.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Student Learning Outcomes:

1. Identify various types of foundations.
    a. Present solutions to problems encountered in regard to water and poor soil.
    b. Develop a dewatering plan.

2. Identify and discuss different types of dirt moving.
    a. Present a plan for offsite fill.
    b. Develop cycle times from compiled data to determine the most cost-effective way to move a given amount of dirt for a known length of haul.
    c. Present a plan for on-site fill.
    d. Identify various soil moving equipment.

3. Demonstrate concrete formwork design.
    a. Explain whalers, ties, plyform, and studs.
    b. Use tabulated data to design a form.
    c. Build a concrete wall.

4. Explain pile driving.
    a. Describe the various types of piles.
    b. Discuss the different types of cranes.
    c. Identify the various types of pile drivers.
    d. Explain the set and number of blows.
    e. Discuss tip, cutoff, and refusal.

5. Demonstrate engineering design principles
    a. Identify the principles in basic rigging
    b. Explain the principles in loading a truck

Course Number and Name: **CON 2243 Construction Systems III**

Description: This course is designed to give a study of material properties and common practices of design and construction of civil/highway structures. The operation and cost of construction machinery and equipment, power generating equipment, and powered fastening systems will be covered.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Explain the types of road/civil construction methods.
    a. Discuss the nature, properties, and use of construction materials.
    b. Examine the principles of roadbed construction.
    c. Describe the environmental impact of highways.
    d. Explore the techniques of highway maintenance and rehabilitation.
    e. Describe the construction of cuts and fills.

2. Explain the types of drainage structure, construction methods, and materials.
    a. Describe the nature, properties, and use of drainage structure materials and equipment.
    b. Demonstrate the construction procedures and processes of drawing drainage and structures.

3. Explain the various operation and costs of construction equipment, machinery, and power generating equipment.
    a. Calculate the cost incurred in the use of typical equipment and machinery.
    b. Demonstrate the operation of the various construction equipment and machinery.
    c. Demonstrate the required power generating equipment needed on various construction projects.

4. Demonstrate the use of powered fastening systems.
    a. Identify the necessary powered fastening devices for a project.
    b. Explain the use of powered fastening devices.
    c. Demonstrate the safe use of powered fastening devices.

Course Number and Name: **CON 2313 Construction Layout**

Description: This is a course designed to provide principles of site preparation and layout of structures. Students will use levels, tapes, and surveying instruments. Triangle calculations, differential leveling, and erection of batter boards and markers are included.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	75

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Identify all phases of the layout of a structure.
    a. Demonstrate the use of batter boards, string lines, and stakes for foundation layout of structures.
    b. Define terms related to site preparation.
    c. Explain the coordinate system.
    d. Identify the job control points.

2. Demonstrate use of a total station and auto level.
    a. Set up an auto level, and conduct a loop of elevations.
    b. Shoot the necessary points for a roadway as per the plan(s).
    c. Shoot and record elevations needed for the slope stakes and cross sections.
    d. Determine the amount of fill/cut.
    e. Time each phase of total station and auto level use to enforce speed as a function of laying out work.

3. Demonstrate the use of the GPS Rover system.
    a. Describe the localization process.
    b. Explain the initialization process.
    c. Find points using information in the data collector.
    d. Build a layer using the topography function.
    e. Calculate volumes of dirt using layers.
    f. Construct a model using 3-D software.

Course Number and Name: **CON 2413 Construction Safety Standards**

Description: This is a course designed to provide management of safety and health in the construction environment. Basic elements of a safety and health program for the construction general contractor are examined to include Occupational Safety and Health Administration (OSHA).

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Examine basic national trenching laws.
    a. Describe the purpose of the laws.
    b. Discuss the various soil conditions.
    c. Demonstrate the procedures for setting up shoring structures.

2. Develop a plan to meet OSHA standards. **MODULE MT203**
    a. Explain an experience modifier.
    b. Describe how to calculate a loss control.
    c. Locate OSHA regulations.

3. Develop a safety policy. **Module 00101-15, Module 00103-15, Module 00104-15, MODULE 44102-08**
    a. Explain safety as a cost savings to construction companies.
    b. Discuss safety culture as a prominent way to influence safety on the jobsite.
    c. Examine the importance of the safety policy as a means to a successful safety program.
    d. Identify appropriate rewards and penalties for compliance and noncompliance of the policy.

4. Examine confined spaces laws.
    a. Describe the purpose of the laws.
    b. Discuss the various conditions.
    c. Demonstrate the procedures for confined space entry.

5. Demonstrate the understanding of crane safety
    a. Operator certification
    b. Assemble/disassemble
    c. Critical lift operations
    d. Crane inspection

NCCER Standards

Core
Module 00101-15 – Basic Safety (construction Site Safety Orientation)

Module 00104-15 – Introduction to Power Tools
Project Management
MODULE 44102-08 – SAFETY

Project Supervision
MODULE MT203 – SAFETY

Course Number and Name: **CON 2513 Leadership and Organization**

Description: This is a course designed to provide a study of the effective leadership and management styles in the construction industry. This includes organization of the construction industry at the local, state, and national levels.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Explain the role of leadership. **Module 00107 – 15, MODULE 44103-08, Module 44104-08, MODULE 44111-08, MODULE MT202**
    a. Describe the role of a manager in the industry.
    b. Identify the role and personal qualities of an effective leader/supervisor.
    c. Discuss the Equal Employment Opportunity Commission (EEOC) laws and regulations.

NCCER Standards

Core
Module 00107 – 15 – Basic Communication Skills

Project Management
MODULE 44103-08 – INTERPERSONAL SKILLS
Module 44104-08 – Issues and Resolutions
MODULE 44111-08 – CONTINUIOUS IMPROVEMENT

Project Supervision
MODULE MT202 – HUMAN RELATIONS AND PROBLEM SOLVING

Course Number and Name: **CON 2523 Project Management**

Description: This course introduces tools and techniques used in project management. Topics include defining project scope, identifying and tracking risks, identify professional development plan; analyze primary project documents including planning, estimating, scheduling, resource control, and quality control; and identify the Project Manager's role for continuous improvement**.**

.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Define project. **MODULE 44101-08**
2. Describe the characteristics of a project manager. **MODULE 44101-08**
3. Describe the basic functions of project management. **MODULE 44101-08**
4. Cite the importance of ethical approaches to project management. **MODULE 44101-08**
5. Discuss the flow and phases of a construction project. **MODULE 44101-08**
6. Describe the four common construction delivery systems. **MODULE 44101-08**
7. Recognize the need for an effective job site safety and loss prevention program. **MODULE 44102-08**
8. Identify the project manager 's duties and responsibilities with respect to safety and loss prevention. **MODULE 44102-08**
9. Identify the direct and indirect cost of accidents. **MODULE 44102-08**
10. Identify potential areas for loss and evaluate the risks. **MODULE 44102-08**
11. Identify methods of risk control. **MODULE 44102-08**
12. Understand OSHA's Focused Inspection Program. **MODULE 44102-08**
13. Evaluate subcontractors on the basis of past safety experience. **MODULE 44102-08**
14. Identify the need for and types of employee participation in safety programs. **MODULE 44102-08**
15. List things to be considered when dealing with the press. **MODULE 44102-08**
16. Plan, implement, and evaluate a job site safety program with assistance from staff safety professionals or outside consultants. **MODULE 44102-08**
17. Briefly describe workforce expectations. **MODULE 44103-08**
18. Describe how stakeholders are identified. **MODULE 44103-08**
19. Define effective communication skills. **MODULE 44103-08**
20. Apply human relations skills to the project management role. **MODULE 44103-08**
21. Apply the Managerial Grid. **MODULE 44103-08**
22. Define the leadership environment. **MODULE 44103-08**
23. Describe mentoring and coaching. **MODULE 44103-08**
24. Apply behavioral interview techniques. **MODULE 44103-08**
25. Construct professional development plans. **MODULE 44103-08**
26. Identify signs of incompetent problem solving and negative problem identification climates. **Module 44104-08**
27. Identify four major barriers to problem solving. **Module 44104-08**
28. Demonstrate these problem solving techniques: **Module 44104-08**
    - Eight-step ladder
    - Fact-finding
    - Root cause diagram
    - Brainstorming
29. Name five key elements of successful negotiation. **Module 44104-08**
30. List four universal truths of negotiation. **Module 44104-08**
31. Cite the four phases of negotiation. **Module 44104-08**
32. Identify and explain the eight negotiating techniques and how to respond to them. **Module 44104-08**
33. Recognize communication cues. **Module 44104-08**

34. Describe the stages of dispute resolution. Module 44104-08
35. Explain the need for documentation on a project. MODULE 44105-08
36. State the various approaches for obtaining work in the construction industry. MODULE 44105-08
37. Identify the parts of a typical project manual. MODULE 44105-08
38. Identify the various types of drawings and format specifications. MODULE 44105-08
39. Discuss the types of contracts used in the construction industry. MODULE 44105-08
40. Discuss insurance requirements for a company and a project. MODULE 44105-08
41. List the types of documents used on a project. MODULE 44105-08
42. Describe the change order process. MODULE 44105-08
43. List the documents necessary to close out a project. MODULE 44105-08
44. Explain the importance of planning a job. MODULE 44106-08
45. Create a performance-based work environment. MODULE 44106-08
46. Explain the importance of scope and the work breakdown structure. MODULE 44106-08
47. State the differences among the pre-construction, construction, and review phases of planning. MODULE 44106-08
48. Describe how the planning process is carried out. MODULE 44106-08
49. Define the roles and responsibilities of an effective team and how to allocate resources. MODULE 44106-08
50. Define commodities, engineered equipment, construction equipment, and construction supplies. MODULE 44106-08
51. Describe how to implement a plan. MODULE 44106-08

MODULE 44107-08 – ESTIMATING AND COST CONTROL

52. Define cost control and identify the purpose of a cost control system. MODULE 44107-08
53. Define budgeted (estimated) cost, actual cost, and projected cost. MODULE 44107-08
54. Define the importance of accurate estimates. MODULE 44107-08
55. Explain the project manager's role in controlling cost. MODULE 44107-08
56. Describe what a reporting system is and how it functions in a cost control system. MODULE 44107-08
57. Explain the process of making a cost analysis. MODULE 44107-08
58. Perform a simple cost analysis. MODULE 44107-08
59. Describe how to track and document the causes and costs of rework. MODULE 44107-08
60. Establish personal task priorities and delegate tasks. MODULE 44108-08
61. Describe the purposes and benefits of using formal project schedules and why it is important to maintain schedules. MODULE 44108-08
62. Identify basic project scheduling terms and inputs. MODULE 44108-08
63. Develop a bar chart schedule. MODULE 44108-08
64. Develop and interpret a network diagram. MODULE 44108-08
65. Identify alternative scheduling methods. MODULE 44108-08
66. Develop and calculate CPM schedules to include early start, early finish, late start, late finish, and total float. MODULE 44108-08
67. Analyze an existing CPM schedule to optimize the project schedule. MODULE 44108-08
68. Update and maintain a project schedule, including establishing baselines and targets. MODULE 44108-08
69. Determine the effects of a change to the schedule. MODULE 44108-08
70. List the five elements of production control. MODULE 44109-08
71. Recognize when production is in control. MODULE 44109-08
72. Describe the role of reports in production control. MODULE 44109-08
73. Identify and explain the major factors which affect production control. MODULE 44109-08
74. Describe methods for alleviating the negative effects of the major production control factors. MODULE 44109-08
75. List the three production standards and specify when they are to be used. MODULE 44109-08
76. Explain the three methods for evaluating productivity. MODULE 44109-08
77. Explain and give examples of production control alternatives. MODULE 44109-08
78. Identify the resources that must be controlled and the project manager 's role in the process. MODULE 44109-08
79. Describe the role of the project manager in evaluating production both during and after a project. MODULE 44109-08
80. Define debriefing and describe how it is accomplished and its value to production control. MODULE 44109-08

MODULE 44110-08 – QUALITY CONTROL AND ASSURANCE

81. Define quality control and quality assurance. MODULE 44110-08

82. Describe the essential components of an effective quality control and assurance program (or process). **MODULE 44110-08**
83. Explain how to develop an effective quality control and assurance process. **MODULE 44110-08**
84. Explain how to monitor the causes and costs of rework. **MODULE 44110-08**
85. Describe the project manager ’s role in the culture of continuous improvement. **MODULE 44111-08**
86. Explain the fundamentals of a comprehensive continuous improvement process as it relates to a project and company. **MODULE 44111-08**
87. Present the objectives and explain the basic steps in implementing a continuous improvement process. **MODULE 44111-08**
88. Describe some applications of continuous improvement. **MODULE 44111-08**
89. Describe how to measure improvement. **MODULE 44111-08**
90. Explain the importance of recognizing employees for embracing the continuous improvement process along with some of the major methods. **MODULE 44111-08**

NCCER Standards

MODULE 44101-08 – INTRODUCTION TO PROJECT MANAGEMENT
MODULE 44102-08 – SAFETY
MODULE 44103-08 – INTERPERSONAL SKILLS
MODULE 44104-08 – ISSUES AND RESOLUTIONS
MODULE 44105-08 – CONSTRUCTION DOCUMENTS
MODULE 44106-08 – CONSTRUCTION PLANNING
MODULE 44107-08 – ESTIMATING AND COST CONTROL
MODULE 44108-08 – SCHEDULING
MODULE 44109-08 – RESOURCE CONTROL
MODULE 44110-08 – QUALITY CONTROL AND ASSURANCE
MODULE 44111-08 – CONTINUIOUS IMPROVEMENT

Course Number and Name: **CON 261(3-6) Internship in Construction Engineering Technology I**

Description: This cooperative program between the construction industry and education is designed to integrate the student's technical studies with on-site construction experiences. It is offered only in the summer term. Credit is awarded on the basis of 1 semester hour per 45 hours of on-site experience.

Hour Breakdown:

Semester Credit Hours	Lecture	Externship	Contact Hours
3		9	135
4		12	180
5		15	225
6		18	270

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Apply technical skills needed to be a viable member of the workforce.
    a. Prepare a description of technical skills to be developed in the internship experience.
    b. Develop technical skills needed to be a viable member of the workforce.

2. Apply skills developed in other program area courses.
    a. Perform skills developed in other program area courses.

3. Apply human relationship skills.
    a. Use proactive human relationship skills in the internship experience.

4. Apply and practice positive work habits and responsibilities.
    a. Perform assignments to develop work habits and responsibilities.

5. Work with instructor and employer to develop written occupational objectives to be accomplished.
    a. Perform written occupational objectives in the internship experience.

6. Assess accomplishment of objectives.
    a. Prepare daily written assessment of accomplishment of objectives.
    b. Present daily written reports of activities performed and objectives accomplished to the instructor.

7. Utilize a set of written guidelines for the internship experience.
    a. Develop and follow a set of written guidelines for the internship experience.

Course Number and Name: **CON 262(3-6) Internship in Construction Engineering Technology II**

Description: This is a continuation of CON 261(3–6) with advanced placement in the on-site construction. It is offered only in the summer term. Credit is awarded on the basis of 1 semester hour per 45 hours of on-site experience.

Hour Breakdown:

Semester Credit Hours	Lecture	Externship	Contact Hours
3		9	135
4		12	180
5		15	225
6		18	270

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Apply technical skills needed to be a viable member of the workforce.
    a. Prepare a description of technical skills to be developed in the internship experience.
    b. Develop technical skills needed to be a viable member of the workforce.

2. Apply skills developed in other program area courses.
    a. Perform skills developed in other program area courses.

3. Apply human relationship skills.
    a. Use proactive human relationship skills in the internship experience.

4. Apply and practice positive work habits and responsibilities.
    a. Perform assignments to develop work habits and responsibilities.

5. Work with instructor and employer to develop written occupational objectives to be accomplished.
    a. Perform written occupational objectives in the internship experience.

6. Assess accomplishment of objectives.
    a. Prepare daily written assessment of accomplishment of objectives.
    b. Present daily written reports of activities performed and objectives accomplished to the instructor.

7. Utilize a set of written guidelines for the internship experience.
    a. Develop and follow a set of written guidelines for the internship experience.

Course Number and Name: **CON 291(1-3) Special Problem in Construction Engineering Technology**

Description: This course is designed to provide students with an opportunity to utilize skills and knowledge gained in other Construction Engineering Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
1		2	30
2		4	60
3		6	90

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Develop a written plan that details the activities and projects to be completed.
    a. Utilize a written plan that details the activities and projects to be completed.
    b. Perform written occupational objectives in the special problem.

2. Assess accomplishment of objectives.
    a. Prepare daily written assessment of accomplishment of objectives.
    b. Present weekly written reports of activities performed and objectives accomplished to the instructor.

3. Utilize and follow a set of written guidelines for the special problem.
    a. Develop and follow a set of written guidelines for the special problem.

Course Number and Name: **CON 292(1-6) Supervised Work Experience in Construction Engineering Technology**

Description: This course is a cooperative program between industry and education and is designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of 1 semester hour per 45 contact hours.

Hour Breakdown:

Semester Credit Hours	Lecture	Externship	Contact Hours
1		3	45
2		6	90
3		9	135
4		12	180
5		15	225
6		18	270

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Apply technical skills needed to be a viable member of the workforce.
    a. Prepare a description of technical skills to be developed in the internship experience.
    b. Develop technical skills needed to be a viable member of the workforce.

2. Apply skills developed in other program area courses.
    a. Perform skills developed in other program area courses.

3. Apply human relationship skills.
    a. Use proactive human relationship skills in the internship experience.

4. Apply and practice positive work habits and responsibilities.
    a. Perform assignments to develop work habits and responsibilities.

5. Work with instructor and employer to develop written occupational objectives to be accomplished.
    a. Perform written occupational objectives in the internship experience.

6. Assess accomplishment of objectives.
    a. Prepare daily written assessment of accomplishment of objectives.
    b. Present daily written reports of activities performed and objectives accomplished to the instructor.

7. Utilize a set of written guidelines for the internship experience.
    a. Develop and follow a set of written guidelines for the internship experience.

Appendix A: RECOMMENDED TOOLS AND EQUIPMENT FOR CONSTRUCTION TECHNOLOGY

CAPITALIZED ITEMS

1. Computer with current operating software with multimedia (20)
2. Total station and target (2)
3. Automatic level and rod (4)
4. Scientific calculator (5)
5. Concrete mixer (1)
6. Concrete cylinder test machine (1)
7. Concrete air pot (1)
8. Scheduling software
9. GPS Rover system (1)
10. GPS Machine Control system(1)
11. 3-D modeling software
12. CADD software
13. Plotter (1)
14. Printers (3)
15. Productivity software
16. Rotating laser

*Other equipment items can be added when deemed appropriate by the community college industry craft committee or by industry/business training requirements.

NON-CAPITALIZED ITEMS

1. Wooden stakes (1 lot)
2. Ribbon flags (1 lot)
3. Markers (1 lot)
4. Hard hats (10)
5. Safety glasses (15)
6. Safety vests (15)
7. Slump cones (1)
8. Hammers (6)
9. Rebar bender/cutters (2)
10. Wheelbarrows (2)
11. Shovels (6)
12 Bullfloat (1)
13. Concrete trowels (3)
14. Rubbing rocks (2)
15. Plyform (3 sheets)
16. Concrete tie wedges (100)

*Other equipment items can be added when deemed appropriate by the community college industry craft committee or by industry/business training requirements.

RECOMMENDED INSTRUCTIONAL AIDS

It is recommended that instructors have access to the following items:

1. Data projector
2. Document camera
2. Digital camera
3. Video camera
4. Laptop or station computer
5. Heavy Equipment Simulator

*Other equipment items can be added when deemed appropriate by the community college industry craft committee or by industry/business training requirements.

APPENDIX B: CURRICULUM DEFINITIONS AND TERMS

- Course Name – A common name that will be used by all community colleges in reporting students

- Course Abbreviation – A common abbreviation that will be used by all community and junior colleges in reporting students

- Classification – Courses may be classified as the following:
    - Career Certificate Required Course – A required course for all students completing a career certificate.
    - Technical Certificate Required Course – A required course for all students completing a technical certificate.
    - Technical Elective – Elective courses that are available for colleges to offer to students.

- Description – A short narrative that includes the major purpose(s) of the course

- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course

- Corequisites – A listing of courses that may be taken while enrolled in the course

- Student Learning Outcomes – A listing of the student outcomes (major concepts and performances) that will enable students to demonstrate mastery of these competencies

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75% of the time allocated to each course. The remaining 25% of each course should be developed at the local district level and may reflect the following:
    - Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
    - Activities that develop a higher level of mastery on the existing competencies and suggested objectives
    - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed or revised
    - Activities that include integration of academic and career–technical skills and course work, school-to-work transition activities, and articulation of secondary and postsecondary career–technical programs
    - Individualized learning activities, including work-site learning activities, to better prepare individuals in the courses for their chosen occupational areas

- Sequencing of the course within a program is left to the discretion of the local college. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors. Programs that offer an Associate of Applied Science Degree must include all of the required Career Certificate courses, Technical Certificate courses AND a minimum of 15 semester hours of General Education Core Courses. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester. Each community college specifies the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college.

- In order to provide flexibility within the districts, individual courses within a framework may be customized by doing the following:

    - Adding new student learning outcomes to complement the existing competencies and suggested objectives in the program framework
    - Revising or extending the student learning outcomes
    - Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the Mississippi Community College Board [MCCB] of the change)

APPENDIX C: COURSE CROSSWALK

Course Crosswalk Construction Engineering Technology					
Note: Courses that have been added or changed in the 2022 curriculum are highlighted.					
Existing			**Revised**		
2016 MS Curriculum Framework			**2022 MS Curriculum Framework**		
Course Number	**Course Title**	**Hours**	**Course Number**	**Course Title**	**Hours**
CON 1113	Survey of Modern Construction	3	CON 1113	Survey of Modern Construction	3
CON 1213	Construction Materials	3	CON 1213	Construction Materials	3
CON 1223	Plans and Document Interpretation	3	CON 1223	Plans and Document Interpretation	3
CON 1233	Construction Systems I	3	CON 1233	Construction Systems I	3
CON 1313	Construction Drawing	3	CON 1313	Construction Drawing	3
CON 2113	Construction Jobsite Management	3	CON 2113	Construction Jobsite Management	3
CON 2123	Construction Cost Estimation	3	CON 2123	Construction Cost Estimation	3
CON 2233	Construction Systems II	3	CON 2233	Construction Systems II	3
CON 2243	Construction Systems III	3	CON 2243	Construction Systems III	3
CON 2313	Construction Layout	3	CON 2313	Construction Layout	3
CON 2413	Construction Safety Standards	3	CON 2413	Construction Safety Standards	3
CON 2513	Leadership and Organization	3	CON 2513	Leadership and Organization	3
CON 261(3–6)	Internship in Construction Engineering Technology	3-6	CON 261(3–6)	Internship in Construction Engineering Technology	3-6
CON 262(3–6)	Internship in Construction Engineering Technology	3-6	CON 262(3–6)	Internship in Construction Engineering Technology	3-6
CON 291(1–3)	Special Problem in Construction Engineering Technology	1-3	CON 291(1–3)	Special Problem in Construction Engineering Technology	1-3
CON 292(1–6)	Supervised Work Experience in Construction Engineering Technology	1-6	CON 292(1–6)	Supervised Work Experience in Construction Engineering Technology	1-6
CON 2523	Project Management	3	CON 2523	Project Management	3

APPENDIX D: RECOMMENDED TEXTBOOK LIST

Recommended Textbook List		
Book Title	**Author(s)**	**ISBN**
Construction & Culture - 2nd ed.	Donald Mulligan & Kraig Knutson	9780875639390
Materials for Civil & Highway Engineers – 4th ed.	Kenneth Derucher, George Korfiatis, & A. Ezeldin	0-13-905043-4
Print & Specification Reading for Construction	Ron Russell	978-0-470-87941-2
Fundamentals of Building Construction – 7th ed.	Edward Allen & Joseph Iano	978-1-119-44619-4
Surveying with Construction Applications	Barry Kavanagh & Dianne Slattery	978-0-13-276698-2
Estimating Construction Costs	Robert Peurifoy & Garold Oberlender	978-0-07-339801-3
Construction Jobsite Management	William Mincks & Hal Johnston	978-1-4390-5573-1
Construction Safety & the OSHA Standards – 2nd ed.	William Mincks & Hal Johnston	978-1-4390-5573-1
Leadership for Dummies	Marshall Loeb & Stephen Kindel	0-7645-5176-0
NCCER Core Curriculum –5th ed.	NCCER	978-0-13-413098-9
NCCER Project Management	NCCER	978-0-13-474426-1
NCCER Project Supervision	NCCER	0-13-103595-9