TRADESFUTURES

MC3 Curricula Summary: Unit Objectives and Materials

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Introduction:

This document was developed to provide an "at-a-glance" overview of the units within TradesFutures' MC3 Learning Management System. What follows is a description of the material provided in the Instructors' Folders of the units intended for *In-Person/Traditional "Face-to-Face"* classes. Materials provided in the *Totally Online- Asynchronous* units are comprised of the same learning objectives and similar, but different, instructional materials**.** Some exercises and videos are embedded within the lesson plans and may not be listed below**.** The content of these units is subject to change over time, as additional materials and resources are added.

Unit 1: Orientation and Industry Awareness (16 hours- Required)

- Instructor Textbook: Orientation and Industry Awareness
- Misc. Resources
    - Helmets to Hardhats brochure
    - Unit 1 Activities and Exercises for Students
    - Unit 1 Video Links
    - TradesFutures Apprenticeship Readiness Program Brochure

Construction Industry Overview (8 hours)

- Lesson Plan: Included
- *Learning Objectives*: Students will be able to…
    - Explain how the construction industry operates
    - Identify the different trades and professions in the construction industry and what they do
    - Describe the demographics and composition of those who work in the construction trades
    - Understand the wage and benefit potential of construction careers
    - Identify and emulate behaviors that lead to a successful career in construction
    - Make an informed decision about whether to pursue a career in the construction industry
- PowerPoints:
    - Construction Industry Facts and Figures
    - Practices for Success in Construction: Attitudes and Behavior
    - Government Agencies
    - Career Options in Construction
- Handouts and Exercises

    - Different Trades Overview Worksheet
    - Building Trades Synopsis
    - Trades Career Self-Assessment
    - Government Agency Exercise (Student and Answer Key)
    - Ethics Exercises: Decisions Decisions
- Videos: [See *Unit 1 video links*]
    - *More than Just a Building*
    - *Core Communications 1*
    - *Core Communications 2*
    - *Core Communications: Appearance*
    - *Respect Scenario*
    - *Workplace Respect*
    - *Ethics and Honesty Scenario*
    - *Conflict Scenario*

The Building Trades and Apprenticeship (8 hours)

- Lesson Plan: Included
- *Learning Objectives*: Students will be able to…
    - Explain what construction trades apprentices are and do
    - Explain the rights and responsibilities of an apprentice
    - Explain the process for becoming an apprentice
    - Explain what a union is and identify the benefits and services it provides
    - Explain what it means to be a union member and identify member roles and responsibilities to the union
    - Develop a plan for setting and achieving SMART goals to attain a construction career
- PowerPoints:
    - Apprenticeship 101
    - Apprenticeship Yesterday and Today
    - Apprenticeship and You
    - Interview Skills
    - Unions: What They Do
    - Motivation and Setting Goals
- Handouts and Exercises
    - Why a Union Apprenticeship FAQ
    - Attributes Interviewers Assess in Candidates
    - Attributes Self-Assessment Worksheet
    - Interview Rating Worksheet
    - Interview Tip Sheet
    - Illegal Interview Questions
- Videos: [See *Unit 1 video links*]

  - Day in the Life Videos (Instructor and Student links)
  - Cleveland Building Trades Council video
  - San Diego Building Trades Council video: *Manny's Comeback Story*
- Miscellaneous Resources:
  - Collective bargaining agreements: IBEW, Ironworkers, Plasterers, and Cement Masons
  - NABTU Affiliates' Codes of Conduct
  - Mock Interview Sample Volunteer Invitation Letter and Instruction

Unit 2: Tools and Materials: Required. (8 hours- Required)

- Lesson Plan: Not Included
  - Alternative: Hands-on Training Delivery Options
- *Learning Objectives*: Students will be able to…
  - Identify the common tools and materials on construction sites
  - Handle construction tools in a safe manner
- Instructor Textbook: None included
- PowerPoints:
  - Tool Classification
  - Bits and Blades
- Handouts and Exercises: None provided
- Videos:
  - Basic Hand Tools in Construction
  - Hand & Power Tool Safety (EHS OkState)
  - Hand and Power Tool Safety (Federal Safety Solutions)
  - OSHA Nightmares Compilation
- Miscellaneous Resources

Unit 3: Construction Health and Safety: (20 hours-Required)

- ***OSHA 10: 10 hours***
  - Lesson Plan: Not included
    - Alternative:
      - Smart Mark OSHA 10 Instructions. Information about accessing NABTU's endorsed Smart Mark program via their building trades partners OR accessing a different approved program using an approved OSHA 10 instructor
  - *Learning Objectives*: Students will be able to…
    - Receive an OSHA 10 card after completing accomplished OSHA 10 learning objectives
  - Instructor Textbook: As provided by OSHA 10 Instructor
  - PowerPoints: As provided by OSHA 10 Instructor

- Handouts and Exercises: As provided by OSHA 10 Instructor
- Videos: As provided by OSHA 10 Instructor
- Miscellaneous Resources:
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- ***CPR/First Aid: 8 hours***
  - Lesson Plan: Not included.
    - Requires delivery by an approved program provider.

    Learning Objectives: Students will be able to
    - Use EMS system efficiently
    - Recognize when 911 should be activated and support the most common situations
    - Treat sudden illness, including poisoning, heat, and cold emergencies
    - Determine the best response to medical emergencies:
      - Heart attack, Stroke, Allergic Reaction; Cardiac Arrest, and Seizure
    - Receive a 1-year Community CPR certificate
    - Receive a 3-year Community First Aid certificate
  - Instructor Textbook: As provided by the program
  - PowerPoints: As provided by the program
  - Handouts and Exercises: As provided by the program
  - Videos: As provided by the program
  - Miscellaneous Resources
    - Instructions for meeting First Aid CPR objectives using the American Red Cross delivery
- ***Health and Safety Issues for Women: 2 hours***
  - Lesson Plan: Included
  - *Learning Objectives*: Students will be able to…
    - Describe why gender matters in the construction industry
    - Describe how health and safety issues are impacted by gender
    - Describe how issues that are specific to gender can be safety concerns
    - Demonstrate what individuals can do to protect themselves and their co-workers
    - Promote equitable health and safety practices and policies in the workplace
  - Instructor Textbook: Not Included
  - PowerPoints:
    - Providing Equitable Health and Safety Protection
  - Handouts and Exercises
    - Sanitary Facilities at the Construction Site, OSHA
    - Pregnant Construction Worker Physician's Alert, CPWR
    - PPE for Women Construction Workers, CPWR
    - PPE Proper Fit = Proper Protection, CPWR
    - Filing Whistle Blower Complaints, OSHA

        - Being a Woman in Construction/Pregnant Workers Fairness Act, NAWIC
        - Risks Facing Women in Construction, NYCOSH
    - Videos: Biggest Dangers for Women in Construction, Ally Safety
    - Miscellaneous Resources:
        - Women and PPE, Ontario Women's Directorate
        - Sanitation Best Practices for Women in Construction, NAWIC
        - PPE for Female Construction Workers Does it Fit?, Mount Sinai Medical Center
        - ISEA Companies; Contacts for PPE for Women
        - Fact Sheet #73: FLSA Protections for Employees to Pump Breast Milk at Work (PUMP Act), DOL
        - What You Should Know about the Pregnant Workers Fairness Act, EEOC

Unit 4: Blueprint Reading: (4, 8, and 16-hour options - Elective)

- Lesson Plans: 4, 8, and 16-hour lesson plans in the form of Instructor Manual Notes/PowerPoints
- ***Basic Blueprint Reading Principles*: *4 hours***
    - Lesson Plan: Included (PPT with Instructor notes)
    - *Learning Objectives:* Students will be able to
        - Define blueprint and blueprint reading
        - Define plans and specifications
        - Describe how plans and specifications are prepared
        - Describe the proper handling of plans
        - Describe the purpose and the importance of a set of plans
        - Identify and describe the features of the cover page and title block
    - Instructor Textbook: Basic Blueprint Reading Principles: Introduction (PPT)
    - PowerPoints:
        - Manual in PPT format
    - Handouts and Exercises
        - Assessment questions and answer key
        - Day One Reading Exercise Q&A
    - Videos: None provided
    - Miscellaneous Resources
        - IUPAT HQ Plans
        - Sample house plans (CAD and hand-drawn)
- ***Plans and Drawings: 8-hours***
    - Lesson plan: Included (PPT with Instructor notes)
    - *Learning objectives*: Students will be able to…
        - Identify the various views of a drawing that are included in a set of plans and their relationship to each other.
        - Identify and define the various parts of a set of plans, such as details, etc.

        - Identify and define material symbols, abbreviations, and lines used in drawings
        - Demonstrate proper handling procedures for a printed set of plans and drawings
        - Define the meaning of “scale.”
        - Use a fractional rule to calculate measurements.
    - Instructor Textbook: Blueprint Reading Principles: Plans and Drawings (PPT)
    - PowerPoints:
        - Manual in PPT format
    - Handouts and Exercises
        - Assessment questions and answer key
    - Miscellaneous Resources: None included
- ***Scales and Dimensions: 16-hours***
    - Lesson plan: Included (PPT with Instructor notes)
    - *Learning Objectives:* Students will be able to…
        - Identify the difference between engineer (civil) and architect scales.
        - Describe the use and purpose of scales and measurements on architectural and shop drawings.
        - Use a scale to measure objects shown on architectural or shop drawings and
          interpret the results.
        - Read and utilize shop drawings and describe their use and purpose.
        - Describe the use and importance of specifications.
        - Determine accurate dimensions using the scale on a full view architectural drawing and shop drawing.
    - Instructor Textbook: Blueprint Reading Principles: Architectural Shop Drawings and Specifications (PPT)
    - PowerPoints: Manual in PPT format
    - Handouts and Exercises
        - Assessment questions and answer key
    - Miscellaneous Resources:
        - Drywall finishing specs
        - Glazier specifications: General and Glass Glazing
        - Painters specifications
        - Shop Drawing: IUPAT HQ building

Unit 5: Math (40 hours – Required)

- Lesson Plan: Included
- *Learning Objectives*: Students will be able to….
    - Trace the history of mathematics and identify systems of measurement
    - Perform mathematical operations with whole numbers

    - Perform mathematical operations with common fractions
    - Perform mathematical operations with decimal fractions
- Instructor Textbook: Basic Mathematics for BAC
- PowerPoints:
    - Unit 1: Basic Mathematics Introduction
    - Unit 2: Whole numbers
    - Unit 3: Common Fractions
    - Unit 4: Decimals Fractions
    - Unit 5: Measurement
- Handouts and Exercises
    - Basic Mathematics for BAC Craftworkers unit tests
- Videos: None Provided
- Miscellaneous Resources
    - Self-paced electronic math refreshers
        - Addition, Subtraction, Multiplication and Division
        - Basic math measurements
        - Fractions (basic)
        - Decimals, percents and basic geometry
    - Math Resources for Construction Math
    - Student workbook

Unit 6: Heritage of the American Worker (8 hours – Required)

- Lesson Plan: Included with supplemental speaking points
- *Selected Learning Objectives*:
    - Describe the "artisan system" of work and skills training in the early years of the American republic, including different roles in this system performed by master craftsmen, journeymen and apprentices;
    - Describe why building and construction tradesmen joined forces in the late 19th century to improve their situations and the reasons these workers chose trade or craft unions as the best types of organizations to achieve their goals
    - Describe the impact of government policy and federal involvement in labor issues on the building trades
    - Identify and define the purpose of key pieces of federal legislation affecting the building trades, such as the Fitzgerald Act, and the Taft-Hartley Act.
    - Describe how many Building Trades locals tried to limit access to training programs to friends, family members, and other insiders; how this limited access kept out racial minorities; and how these practices undermined the reputation of the Building Trades around the country
    - Describe the series of attacks by powerful business interests throughout labor history to push back against the growing strength of the building trades.

    - Describe new initiatives of the building trades intended to recruit new members and increase diversity among apprentices and in the general membership, through programs such as the Multi-Craft Core Curriculum, Helmets to Hardhats, the NABTU Tradeswomen Committee, and others.
- Instructor Textbook:
    - Included: Workers' Heritage in the Building Trades
- PowerPoints:
    - Heritage of the American Worker
- Handouts and Exercises:
    - Glossary of Terms
    - Dig Where You Stand activity sheet
- Videos:
    - Listing of links to individual construction union history websites and videos
    - Trade Union History Videos Instructor Guide
- Miscellaneous Resources
    - Labor heritage discussion questions

Unit 7: Maintaining a Respectful Workplace in the Construction Industry (12 hours-Required)

- ***Cultural Awareness (4 hours)***
    - Lesson Plan: Included
    - *Learning Objectives*: Students will be able to…
        - Explain the importance of a culturally varied workforce in the construction industry
        - Identify the importance of the construction industry to culturally varied populations
        - Identify the historical and social roots of under-representation of women and minorities in the trades
        - Explain the barriers and challenges to building a culturally varied construction workforce and an equitable worksite
        - Explain what it means to be a culturally competent person and organization
        - Identify equal employment opportunity and non-discrimination rights in the workplace and classroom
    - Instructor Textbook: Not Included
    - PowerPoints
        - Building Cultural Competency and Respect in the Workplace
    - Handouts and Exercises
        - Myths and Facts about Women in the Trades
        - Identifying Gender Neutral Terms (Student and Answer Key)
        - Springboard for Discussing Discrimination
        - Unpacking the Invisible Backpack

        - Affirmative Action Myths and Realities (Student and Answer Key)
        - Civil Rights and Affirmative Action History
        - Gender Equity Quiz (Student and Answer Key)
    - Videos:
        - *Sista in the Brotherhood (available upon request from TradesFutures)*
        - *Widen the Screen*
        - *The "Look"*
        - *Cleveland Building Trades and Diversity*
        - *Ontario Building Trades: Be that One Guy*
    - Miscellaneous Resources
        - Putting a Gender Lens on the MC3 PPT
        - MN Apprenticeship Benefits from Expanding Outreach

- ***Preventing Sexual harassment (8 hours)***
    - Lesson Plan: included
    - *Learning Objectives*: Students will be able to…
        - Identify respectful practices and behaviors in the workplace
        - Distinguish between legal application of sexual harassment and workplace policies for acceptable behavior.
        - Recognize and define different forms of sexual harassment.
        - Explain why sexual harassment is a problem in the construction workplace.
        - Identify who is harmed by sexual harassment.
        - Demonstrate action steps to take in response to witnessing or experiencing sexual harassment
    - Instructor Textbook: Not Included
    - PowerPoints: Sexual Harassment: Being Part of the Solution
    - Handouts and Exercises:
        - Impact of Sexual Harassment review sheet
        - Myths and Stereotypes about Sexual Harassment (answer key)
        - Sexual Harassment Scenarios activity sheets
        - Sexual Harassment Wrap-up Quiz (Student and Answer key)
    - Videos
        - *Sista in the Brotherhood* (*available only upon request from TradesFutures)*
        - Women workers put construction industry on notice (ABC news article and clip)
    - Miscellaneous Resources:
        - EEOC Case study (Hill Brothers Construction)
        - ENR Me Too in Construction article
        - NYT article: Why victims aren't believed

Unit 8: Green Construction (8 hours - Required)

- Lesson Plan*:* GPRO Green Construction Instructors Guide
- Handouts and Exercises:
    - Building Skills Project Assessment ***(1.5 hours)***
- Miscellaneous Resources:
    - GPRO Portal PPT and Instructions
    - GPRO Portal and Exam Registration Form
- ***Getting Started with Green Building (2.5 hours)***
    - *Learning Objectives*: Students will be able to:
        - Explain how jobs in green building can have an impact on climate change
        - Recognize the key systems and stakeholders that contribute to a high-performance building
        - Understand the wide variety of jobs and skills that are needed for green building
        - Consider what career pathway you might pursue in the green building field
    - Instructor Textbook: Getting Started with Green Building Workbook
    - PowerPoints:
        - Getting Started with Green Building (with and without Instructor notes)
- ***Fundamentals of Building Green (4 hours)***
    - Learning Objectives**:** Students will be able to**:**
        - Explain the relationship between buildings and climate change
        - Understand the basic elements of high-performance construction and building operations
        - Describe the role of trades on high-performance job sites
        - Describe energy-consuming building systems and a high-level overview of the strategies to reduce building energy use
    - Instructor Textbook: Fundamentals of Building Green Workbook
    - PowerPoints
        - Fundamentals of Building Green (with and without Instructor notes)
- ***Offshore Wind Construction Supplement (2 hours)***
    - Lesson plan: Included
    - Learning Objectives – Students will be able to:
        - Describe the basic elements of offshore wind turbines and understand the installation process;
        - Understand the benefits and challenges of offshore wind power plants;
        - Describe the outlook for offshore wind projects and identify regions where these projects will be located; and
        - Understand the basic elements of floating offshore wind turbines and identify the differences between monopile turbines.
    - Instructor Textbook: None Provided
    - PowerPoints
        - Offshore Wind Supplemental
    - Handouts and Exercises:
        - None included

- Videos:
  - Offshore Windfarms Documentary
  - How It All Comes Together at Sea: Installing an Offshore Windfarm
  - Floating Offshore Wind Turbine Installation
- Miscellaneous Resources
  - Will Floating Turbines Usher in a New Wave of Offshore Wind? (weblink article)
  - Offshore Wind 101: diagrams and definitions
  - U.S. Department of Energy Offshore Wind Report:
  - Wildlife and Wind Power:
  - The Economic Impact of U.S. Offshore Wind Power

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Unit 9: Financial Literacy (4 and 8-hour Options- Elective)

- Lesson Plans: 4-hour and 8-hour lesson plans included
- *Learning Objectives:* Students will be able to…
    - Identify the rationale for financial literacy and empowerment
    - Devise a strategy for savings, debt management, and investment
    - Define basic financial services and products
    - Devise a strategy for protecting their finances and preparing for retirement
    - Participants will be able to construct a budget
- Instructor Textbook: None Included
- PowerPoints (4-hour and 8-hour versions)
    - Introduction to Financial Literacy
    - Savings and Investments
    - Credit and Debt
    - Protecting Your Finances
    - Preparing for Retirement
    - Budgeting
- Handouts and Exercises
    - Financial Self-Assessment
    - Where to Stash Your Cash, Exercise and Key
    - Stock Market Investing Worksheets and Instructor Guide
    - Credit Score Myths Debunked
    - Finding the Best Credit Card
    - Guide to Establishing Credit
    - How Much Are You Paying?: Impact of Interest Rates
    - Protecting Your Money
    - Protecting Your Finances: Scenarios and Key
    - Defined Benefit vs Defined Contribution Instructions
    - Budgeting for 1st to 4th Year Apprentices, Exercise and Key
    - Budgeting in Five Easy Steps Exercise and Key
    - Erratic Pay Check Exercise and Key
    - Decisions Decisions; Which Truck to Buy?
    - Ways to Save Money
    - Stock market exercise worksheet
- Videos: None included
- Miscellaneous Resources
    - Glossary of terms
    - Finding Financial Products and Services
    - Online Financial Literacy Resources
    - Your Money Your Goals Toolkit (CFPB)

Unit 10: Where Construction Meets AI (3 hours - Elective)

- Lesson Plan: Included
- *Learning Objectives*: Students will be able to…

AI foundations and where AI meets construction (one hour)

1. Describe the role of data centers in AI infrastructure and identify key responsibilities in their development and operations, including the specific trades involved in construction and maintenance.
2. Define artificial intelligence (AI), explain its fundamental principles and functions, and distinguish between traditional AI and generative AI.
3. Describe how using AI can affect jobs and workplaces in construction. Identify the benefits (like making work safer or faster), the challenges (such as learning new skills or making sure technology is used responsibly), and ask questions about things that are still unknown or changing in the industry.

Hands-on Generative AI + Prompting (one hour)

1. Demonstrate basic skills with generative AI tools (e.g., Microsoft Copilot) to create text, images, or summaries for construction-related tasks
2. Compose effective prompts for generative AI tools by applying best practices for prompt writing, such as being clear, specific, and goal-oriented, providing necessary context, and iteratively refining prompts to achieve accurate and useful results.
3. Discuss how AI may change construction jobs, including potential new roles and skills workers may need.
4. Identify examples of AI and generative AI used in construction and explain how they could support different trades and roles.

Responsible AI Use + Performance Task (one hour)

1. Apply responsible practices when using generative AI, including understanding issues of accuracy, bias, privacy, and copyright.
2. Discuss how AI may change construction jobs, including potential new roles and skills workers may need.
3. Identify examples of AI and generative AI used in construction and explain how they could support different trades and roles.

- Instructor Textbook: Not Included
- PowerPoints: A single provided PowerPoint covering all three lessons
- Handouts and Exercises
    - Role-playing scenario cards
    - Prompting workshop scenario worksheet
- Videos:
    - Data Centers: The Secret to Connectivity
    - Video: *AI companion in content creation*
    - Optional: *What is Microsoft Copilot?*
    - *What is Artificial Intelligence?*

    - *What is Generative AI?*
    - *Prompt Engineering*

- Miscellaneous Resources
    - Prerecorded Instructor Training (available upon request)
    - Written Instructor Training