



الأكاديمية الوطنية للبناء
National Construction Academy (NCA)

Semester 4 COURSES





LEWIS TAYLOR

Academic Director

“ At our core, we integrate pedagogical excellence with a dynamic curriculum with diverse modes of study, advancing technical proficiency, skilled craftsmanship, and innovative thought and leadership within the construction industry. ”

FUNDAMENTALS OF PROJECT MANAGEMENT

Introduction

The fundamentals of project management course is designed to equip trainees with the essential knowledge and skills required to effectively manage projects in their respective fields. This course covers key project management principles, industry-standard terminology, and best practices. Trainees will gain a comprehensive understanding of various project roles, knowledge areas, and management domains, including both traditional and Agile methodologies. Additionally, the course focuses on practical skills in time management, cost control, risk management, and Agile project execution.



Course Objectives

Upon successful completion of this course, trainees will be able to:

1. Understand Project Management Fundamentals – Define key project management concepts, terminology, and methodologies.
2. Identify Project Roles and Responsibilities – Recognize the roles of project managers, stakeholders, and team members in different project environments.
3. Apply Knowledge Areas and Domains – Gain proficiency in project integration, scope, schedule, cost, quality, resource, communication, risk, procurement, and stakeholder management.
4. Develop Time and Cost Management Strategies – Utilize techniques to create project schedules, allocate resources, and control project budgets.
5. Assess and Mitigate Project Risks – Identify potential project risks and implement risk response strategies to ensure project success.
6. Implement Agile Project Management Practices – Apply Agile methodologies such as Scrum and Kanban to manage projects in dynamic environments.

CONSTRUCTION MANAGEMENT

Introduction

This course provides a comprehensive understanding of construction management, focusing on the principles and practices essential for successful project execution. It covers key aspects such as project planning, scheduling, cost estimation, resource allocation, risk management, contract management, and quality control. Topics include construction methodologies, project control techniques, construction industry classification, and various procurement methods. Trainees will explore scheduling tools like Gantt charts, network diagrams, and the PERT method, along with practical applications such as critical path analysis, resource leveling, and project monitoring. Through a combination of lectures, case studies, and hands-on projects, Trainees will develop the skills necessary to effectively manage construction projects from inception to completion.

Course Objectives

Upon successful completion of this course, trainees will be able to:

1. Understand Project Management Fundamentals – Define key project management concepts, terminology, and methodologies.
2. Identify Project Roles and Responsibilities – Recognize the roles of project managers, stakeholders, and team members in different project environments.
3. Apply Knowledge Areas and Domains – Gain proficiency in project integration, scope, schedule, cost, quality, resource, communication, risk, procurement, and stakeholder management.
4. Develop Time and Cost Management Strategies – Utilize techniques to create project schedules, allocate resources, and control project budgets.
5. Assess and Mitigate Project Risks – Identify potential project risks and implement risk response strategies to ensure project success.
6. Implement Agile Project Management Practices – Apply Agile methodologies such as Scrum and Kanban to manage projects in dynamic environments.

ENGLISH FOR CONSTRUCTION 2

Introduction

This course provides a comprehensive understanding of construction management, focusing on the principles and practices essential for successful project execution. It covers key aspects such as project planning, scheduling, cost estimation, resource allocation, risk management, contract management, and quality control. Topics include construction methodologies, project control techniques, construction industry classification, and various procurement methods. Trainees will explore scheduling tools like Gantt charts, network diagrams, and the PERT method, along with practical applications such as critical path analysis, resource leveling, and project monitoring. Through a combination of lectures, case studies, and hands-on projects, Trainees will develop the skills necessary to effectively manage construction projects from inception to completion.

Course Objectives

1. Develop English language skills relevant to construction and engineering.
2. Enhance communication abilities in workplace interactions.
3. Familiarize learners with industry-specific terminology and technical vocabulary.
4. Improve comprehension of technical documents, safety procedures, and project discussions.

Course Structure

Unit 1: Teamwork

- Discussing roles and responsibilities in construction projects.
- Using present tenses to describe ongoing and routine tasks.
- Understanding job roles and team coordination in construction environments.
- Example: Collaboration between site managers and engineers in project planning.

Unit 2: Design

- Understanding technical drawings, estimations, and project improvements.
- Discussing ideas and providing feedback on construction designs.
- Learning key terminology related to dimensions, estimation, and office features.
- Example: Evaluating blueprints and cost estimates for a skyscraper project.

Unit 3: Equipment

- Identifying construction tools and their functions.
- Explaining faults and necessary repairs in construction machinery.
- Understanding passive structures to describe processes and issues.
- Example: Reporting and fixing broken machinery on-site.

Unit 4: Materials

- Ordering and describing construction materials.
- Comparing material properties and discussing supply chain issues.
- Handling delivery complications and communicating effectively with suppliers.
- Example: Coordinating the procurement of high-quality concrete for a bridge project.

Unit 5: Processes

- Explaining recruitment and purchasing processes in construction.
- Using appropriate language for sequencing and explaining work procedures.
- Understanding how construction sites manage workforce hiring and supply procurement.
- Example: Planning a recruitment strategy for an international engineering project.

Unit 6: Project Management

- Managing tasks and discussing key issues in project meetings.
- Understanding contract terms and their implications in construction.
- Learning expressions related to deadlines, deliverables, and project scope.
- Example: Setting milestones for the construction of a toll motorway.

Unit 7: Documentation

- Managing document control and making amendments to project documentation.
- Understanding legal obligations and key terminology used in construction records.
- Providing accurate specifications for project plans and contracts.
- Example: Reviewing and finalizing documentation for a golf course construction project.

Unit 8: Health & Safety

- Communicating safety guidelines and workplace procedures.
- Implementing traffic control measures on construction sites.
- Describing incidents and learning the appropriate responses.
- Example: Conducting emergency response drills for hurricane preparedness.

ELECTIVE COURSES



RADFAN ABDULRAHMAN

Head of Engineering, Al-Qassim

“Elective courses equip Saudi Arabia’s workforce with specialized skills essential for the construction industry and the evolving labor market. Aligned with Saudi Vision 2030, they enhance employability, bridge skills gaps, and support national infrastructure projects by ensuring a highly skilled workforce meets industry standards.”



CARPENTRY

Introduction

The Carpentry Fundamentals training course is designed to provide trainees with a deep understanding of essential formwork carpentry techniques and principles. Based on recognized carpentry books and various industry sources, this training maximizes real-world applicability in construction environments.

Key topics include safety protocols, tool identification and usage, formwork for concrete structures, scaffolding systems, blueprint reading, material selection, and general construction techniques. Additionally, the course incorporates the Saudi Building Code (SBC) to ensure that trainees understand and apply national standards for safety, quality, and compliance in carpentry and formwork construction.

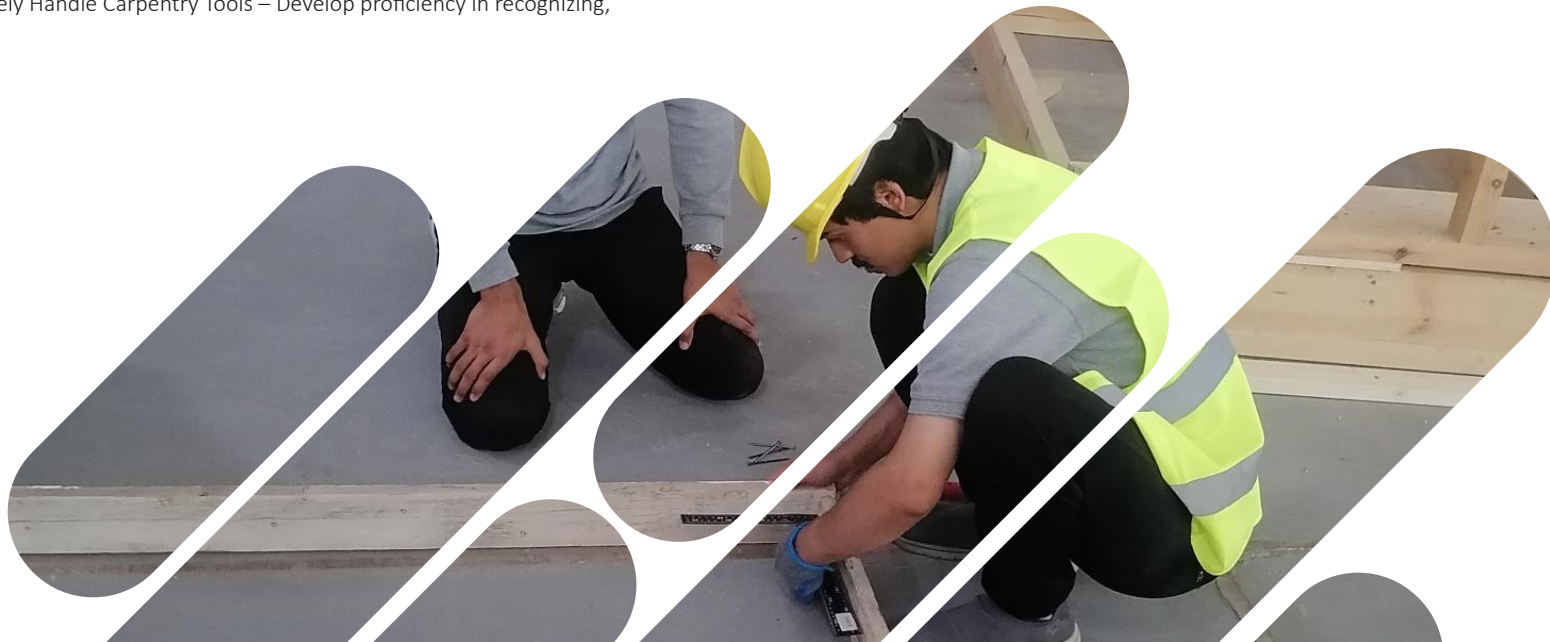
Through a combination of theoretical instruction and hands-on practice, trainees will develop the necessary skills to pursue a career construction specialized in carpentry while adhering to industry regulations and best practices.

Course Objectives

- Understand Fundamental Carpentry Principles – Learn core concepts, techniques, and best practices in carpentry.
- Identify and Safely Handle Carpentry Tools – Develop proficiency in recognizing,

using, and maintaining essential carpentry tools and equipment.

- Apply Proper Safety Procedures in Construction Work – Recognize workplace hazards and implement safety protocols in compliance with industry standards.
- Construct and Install Formwork for Concrete Structures – Gain hands-on experience in assembling and installing formwork for different construction applications.
- Set Up and Work with Scaffolding Systems – Learn about different types of scaffolding, assembly techniques, and safety measures for working at heights.
- Interpret Blueprints and Technical Drawings – Develop the ability to read and understand construction plans, dimensions, and project specifications.
- Select and Work with Construction Materials – Learn about various wood types, and other essential materials used in carpentry and formwork.
- Execute Basic Construction Techniques – Acquire practical skills in measuring, cutting, joining, and assembling structures accurately.
- Apply Saudi Building Code Requirements – Implement national building regulations to ensure compliance in carpentry and formwork projects.
- Prepare for a Career in Carpentry and Construction.



ELECTRICAL

Introduction

ELEC004 introduces trainees to essential electrical engineering concepts, with a strong emphasis on compliance with the Saudi Electrical Code (SBC 401). The course is designed to provide a balanced combination of theoretical knowledge and hands-on practical training over a 15-week period, equipping trainees with the necessary skills for real-world electrical tasks.

The first four weeks focus on fundamental electrical theory, covering key topics such as Electrical Engineering Basics, Safety Protocols, Load Calculations, Electrical Drawings, and SBC 401 Compliance. Week 5 includes a theory assessment before transitioning into practical training.

From Weeks 5 to 15, trainees engage in intensive hands-on exercises to master the use of electrical tools, wiring methods, circuit protection, troubleshooting techniques, electrical control systems, and structured wiring. By the end of the course, Trainees will have developed competency in electrical installations, safety compliance, system maintenance, and project execution in alignment with SBC 401 regulations.

Course Objectives

1. Upon successful completion of this course, trainees will be able to:
2. Understand and apply fundamental electrical engineering concepts, including voltage, current, resistance, and power calculations.
3. Interpret and adhere to the Saudi Electrical Code (SBC 401) and electrical safety regulations to ensure compliance in all installations.
4. Demonstrate proficiency in using electrical tools and equipment, including meters, wiring devices, and protection systems.
5. Perform accurate load calculations and apply them in real-world circuit design and installation.
6. Install and troubleshoot electrical wiring systems, circuit protection devices, and electrical control components.
7. Analyze and solve electrical faults using diagnostic tools and structured troubleshooting techniques.
8. Develop hands-on skills in structured wiring, panel installations, and system maintenance according to SBC 401 standards.

PLUMBING

Introduction

This course provides trainees with fundamental plumbing skills essential for construction projects in Saudi Arabia. It covers key aspects of plumbing systems, including water supply, drainage, sanitary fixtures, and venting, in compliance with the Saudi Building Code (SBC 701). Through hands-on training, trainees will learn pipe fitting, fixture installation, and maintenance, ensuring adherence to SBC plumbing codes and safety regulations. The course also emphasizes plumbing system design, sustainability, and troubleshooting techniques to equip trainees with real-world problem-solving skills.

Course Objectives

1. Understand plumbing systems, including water supply, drainage, and venting as per SBC 701.
2. Ensure compliance with SBC plumbing codes, safety regulations, and best practices.
3. Gain hands-on experience in pipe fitting, fixture installation, and drainage networks.
4. Learn to interpret plumbing blueprints, calculate pipe sizes, and design layouts.
5. Apply safe and sustainable plumbing practices, including water conservation.
6. Develop problem-solving skills to diagnose and repair plumbing issues.



OCCUPATIONAL HEALTH & SAFETY

Introduction

The OSHA 30-Hour Construction Training Course, offered by the National Construction Academy (NCA), is a comprehensive program designed for construction professionals. This course provides in-depth instruction on OSHA regulations, hazard identification, risk assessment, and the proper use and maintenance of personal protective equipment (PPE). Delivered over 30 hours through a blend of classroom instruction, hands-on training, and interactive online modules, it equips participants with essential safety protocols to ensure a secure work environment. Key topics covered include fall prevention, electrocution hazards, emergency response, and accident investigation and reporting. By mastering these critical safety measures, participants can effectively identify workplace risks, implement preventive strategies, and respond appropriately to emergencies, fostering a culture of safety and compliance on the job site.

Course Objectives

1. Understand OSHA regulations, workers' rights, and employer responsibilities.
2. Identify common construction hazards and workplace risks.
3. Conduct risk assessments and implement safety control measures.
4. Properly use, maintain, and select personal protective equipment (PPE).
5. Apply fall prevention techniques and work safely at heights.
6. Recognize and prevent electrical hazards, including lockout/tagout (LOTO).
7. Develop and implement emergency response plans.
8. Investigate and report workplace accidents following OSHA guidelines.
9. Promote a proactive safety culture in construction environments.

LAND SURVEYING

Introduction

This course provides a comprehensive exploration of land surveying, highlighting its essential role in modern construction. Trainees will gain a thorough understanding of various surveying methods, including traversing, leveling, triangulation networks, and trapezoidal methods.

The course covers in-depth of land surveying concepts, along with the application of modern technologies and instruments. Key topics include, area and volume computations, techniques of leveling, traverse surveys and computations, total stations operations, construction layout using total stations, geomatics, GPS/GNSS systems, and documenting and interpreting survey results.

Course Objectives

1. Demonstrate a strong understanding of key land surveying methods, including traversing, leveling, and triangulation network.
2. Accurately perform area and volume computations required for earthwork.
3. Understand and use angles, azimuths, and bearings for directions and distance measurement in surveying.
4. Effectively conduct traversing and computations, ensuring accuracy and error minimization.
5. Use advanced leveling techniques to establish height references.
6. Apply modern technologies and instruments, such as GPS/GNSS systems and robotic total stations for precise and efficient surveying.
7. Stake out and lay out construction projects using total stations instrument.
8. Explore various functions of total stations instrument, such as topographic survey, line offset, and highway survey.
9. Explore modern software, such as Civil 3D to analyze and interpret surveyed data.

By the end of this course, Trainees will be proficient in handling advanced surveying equipment, applying theoretical knowledge to real-world situations.

HEAVY EQUIPMENT OPERATION

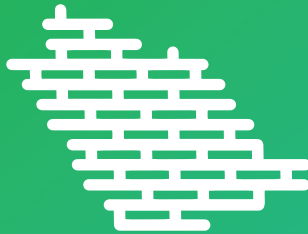
Introduction

The Heavy Equipment Operation course is designed to equip trainees with the essential knowledge and hands-on skills required to operate heavy machinery used in construction and industrial sites. This course emphasizes workplace safety, operational techniques, and site management, preparing trainees for real-world job environments. Through a combination of theoretical instruction and practical training, participants will develop the competencies necessary to handle heavy equipment efficiently while adhering to safety regulations and industry best practices.

Course Objectives

1. Identify and understand the various types of heavy machinery used in construction and industrial applications.
2. Develop essential operating techniques to safely and efficiently handle heavy equipment.
3. Apply workplace safety standards and best practices to prevent accidents and ensure compliance with regulations.
4. Demonstrate site management skills to effectively coordinate equipment operation within a job site.
5. Translate theoretical knowledge into practical skills by engaging in real-world operational scenarios.
6. Enhance teamwork and adaptability, preparing for dynamic work environments in the construction industry.





الأكاديمية الوطنية للبناء
National Construction Academy (NCA)