



FORT LEONARD WOOD, MO
NONCOMMISSIONED OFFICERS ACADEMY
SYLLABUS FOR 12T30
ADVANCED LEADER COURSE



TECHNICAL ENGINEER SUPERVISOR

Purpose:

The 12T30 Technical Engineer Advanced Leader Course provides 12T Noncommissioned Officers with the technical and tactical skills required to successfully serve as Technical Engineer Squad Leaders. The course also enhances the student's ability to lead, train, and direct subordinates in all aspects of technical engineering.

Course Scope:

Students will demonstrate proficiency in how to Conduct a Technical Construction Analysis, Produce a Construction Site Design, Perform Construction Management, Perform Soil Supervisory Duties, Determine Asphalt Design, Prepare Roadway Design, Process Surveying Data and Conduct Geodetic Airfield Heliport Survey.

Course Prerequisites:

Active Army or Reserve Component enlisted personnel selected by DA (Active Army) or recommended by unit Commander (Reserve Component). Qualified in MOS 12T. Meet requirements outlined in AR 350-1 (para 3-8) and DA Pam 611-21. All Soldiers must have successfully completed the Basic Leader Course (BLC) at least six months before attending this course.



TECHNICAL ENGINEER SUPERVISOR



Security Clearance: Unclassified

Course Length–Weeks: 9 **Days:** 1 **Hours:** 347.3

Class Sizes – Optimum: 12 **Min:** 4 **Max:** 12

Administrative Time:

Module: A / 001 13.7

Title: Administrative

Academic Time:

Module: B / 001 11.7

Title: Shared Engineer Task

Module: C / 001 246.3

Title: Technical Training

Module: D / 001 72.0

Title: Situational Training Exercise (STX)



TECHNICAL ENGINEER SUPERVISOR



Module: A / 1

Title: Administrative

Purpose: The purpose of this module is to get Soldiers inprocessed, settled in and making sure all required administrative documents are completed and all necessary references, training aids are issued to each student.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

13.7

Security Clearance: Unclassified

Module: B / 1

Title: Shared Engineer Tasks

Purpose: The purpose of this module is to train Technical Engineer Squad Leaders on preparing for an Improvised Explosive Device (IED) threat prior to movement as well as conducting an IED threat analysis. It also discusses the troop-leading procedures and the Supervise Infrastructure Reconnaissance (SWEAT).

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

11.7

Security Clearance: Unclassified

Lesson Title: Prepare for Improvised Explosive Device Threats Prior to Movement

Lesson Title: React to an Improvised Explosive Device (IED) Attack

Lesson Title: Integrate Crew Systems

Lesson Title: Determine Vehicle Recovery Requirements

Lesson Title: Plan Mounted/Dismounted Movement of Personnel and Equipment

Lesson Title: Conduct a Person Search



TECHNICAL ENGINEER SUPERVISOR



Module: C01 / 1

Title: Conduct Technical Construction Analysis

Purpose: This module provides instruction on how to establish project information for a proposed construction site as well as how to produce a pre-construction site analysis report for a construction site. It also discusses how to identify and determine uses of rock as well as how to identify surficial features of geology found on a map. The Module concludes with a written examination.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

26.6

Security Clearance: Unclassified

Lesson Title: The Army Records Information Management System (ARIMS)

References: AR 25-400-2 The Army Records Information Management System
(all)

Lesson Title: Establish Project Information

References: FM 5-412 Project Management (Chapter 1)

Lesson Title: The A / E / C CADD Standards

References: ERDC/ITL TR-09-2 A / E / C CAD Standards (all)

Lesson Title: Identify and Determine Uses of Rock

References: FM 5-410 Military Soils Engineering (Chapters 1 & 5)

Lesson Title: Identify Surficial Features of Geology

References: FM 5-410 Military Soils Engineering (Chapter 3)



TECHNICAL ENGINEER SUPERVISOR



Module: C02 / 1

Title: Produce a Construction Site Design

Purpose: This module provides instruction on how to produce a construction site design utilizing Terramodel software. It also discusses how to ensure all features, dimensions, and that notes are accurate according to the design sketch, the specifications, and A/E/C CADD Standards. The Module concludes with a hands on evaluation test.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

25.4

Security Clearance: Unclassified

Lesson Title: Terramodel

References: Terramodel Manuals

Lesson Title: JCMS

References: JCMS Manuals

Module: C03 / 1

Title: Perform Technical Construction Management

Purpose: This module provides instruction on technical equipment maintenance as well as producing a bill of materials (BOM) list. It also discusses how to properly do a work schedule and inspection of a construction site. The Module concludes with a hands on evaluation test and a written examination.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

42.8

Security Clearance: Unclassified

Lesson Title: Prepare Materials Take Off List

References: TM 3-34-47

Lesson Title: Develop a Quality Assurance Control (QA-QC) Check List

References: TM 3-34.42

Lesson Title: Develop Work Schedule

References: TM 3-34.42

Lesson Title: Determine Technical Project Support Requirements

References: TM 3-34.42



TECHNICAL ENGINEER SUPERVISOR



Module: C04 / 1

Title: Perform Soil Technician Supervisory Duties

Purpose: This module provides instruction on how to design a concrete mix as well as discusses how to determine the California Bearing Ratio (CBR). It also provides instruction on determining soil stabilization using the required field sheets (DD Forms: 1206, 1207, 1208, 1209, 1794, and 2463). The Module concludes with a written examination.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

30

Security Clearance: Unclassified

Lesson Title: Design Concrete Mix

References: FM 5-428 Concrete and Masonry (Chapters 2 & 3)

Lesson Title: California Bearing Ratio

References: FM 5-472 Materials Testing (Chapter 2 Section IX & Appendix B)

Lesson Title: Determine Soil Stabilization

References: FM 5-410 Military Soils Engineering (Chapters 6 & 9)
FM 5-430-00-1 Planning and Design of Roads, Airfields, and
Heliports in the Theater of Operations – Road Design

Module: C05 / 1

Title: Determine Asphalt Design

Purpose: This module provides instruction on how to determine design requirements for asphalt mixtures, using both conventional methods and the Marshall Stability Test. The module concludes with written examination.

Remarks: None

Hours

30

Security Clearance: Unclassified

Lesson Title: Design Aggregate Blend to Meet Job Mix Specifications for Asphaltic Concrete

References: FM 5-472/TM 3-34.63

Lesson Title: Design Bituminous Mix by Marshall Stability Method

References: FM 5-472/TM 3-34.63



TECHNICAL ENGINEER SUPERVISOR



Module: C06 / 1

Title: Prepare Roadway Designs

Purpose: This module provides instruction on how to select routes for proposed roads, horizontal & vertical curve restrictions, grade line & drainage requirements. It also discusses how to emplace the appropriate culvert to allow for proper flow of drainage. The Module concludes with a hands on evaluation test utilizing Terramodel software as well as a written examination..

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

40

Security Clearance: Unclassified

Lesson Title: Design and Draw the Roadway (Design Roads Steps)

References: FM 5-430-00-1 Planning and Design of Roads, Airfields, and Heliports in the Theater of Operations – Road Design (Chapters 9 & 11), Terramodel Manuals

Lesson Title: Determine Drainage Requirements

References: FM 5-430-00-1 Planning and Design of Roads, Airfields, and Heliports in the Theater of Operations – Road Design (Chapter 6)

Module: C07 / 1

Title: Process Surveying Data

Purpose: This module provides instruction on how to conduct and process an Obstruction Survey. This module utilizes Trimble surveying equipment and Trimble design software to provide elevations and locations of object that are not surveyable using construction survey methods. The students observe and process survey data, both in the field and in the classroom.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

24

Security Clearance: Unclassified

Lesson Title: Trimble Business Center

References: Trimble Business Center Manuals



TECHNICAL ENGINEER SUPERVISOR



Module: C08 / 1

Title: Geodetic and Airfield Heliport Survey

Purpose: This module focuses on the supervisory roles of Airfield survey missions, to include planning, processing and geodetic survey operations. A special emphasis will be place on obstruction chart survey as well as compilation reports using DA forms 5821, 5822 and 5827. The Module concludes with a written exam.

Remarks: None

Security Clearance: Unclassified

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

37.5

Lesson Title: Plan Differential Global Positioning System (DGPS) Survey Project

References: FAA 405

Lesson Title: Prepare an Airfield/Heliport Obstruction Survey Chart

References: FAA 405

Lesson Title: Supervise Airfield/Heliport Obstruction and Navigational-Aid Survey

References: FAA 405

Lesson Title: Conduct a Project Briefing

References: FAA 405

Lesson Title: Prepare Project Progress Report

References: FAA 405

Lesson Title: Develop an Airfield-Heliport Obstruction and Navigational-Aid
Compilation Report

References: FAA 405



TECHNICAL ENGINEER SUPERVISOR



Module: D / 1

Title: Situational Training Exercise (STX)

Purpose: This module provides the students to incorporate everything they have learned throughout the course. In addition, it is the culminating event that allows for students to work on their tactical leadership skills to include their technical skills as well. The Module concludes with a performance evaluation on leadership in a tactical environment.

Remarks: None

Security Clearance: Unclassified

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

72



TECHNICAL ENGINEER SUPERVISOR



Written Examinations

Conduct Technical Construction Analysis

Perform Construction Management

Soil Technician Supervisory Duties

Determine Asphalt Design

Drainage

Conduct Geodetic Airfield Heliport Survey

Hands-on Examinations

Site Design

Road Designs

Materials Take-Off

Evaluations

APFT

PRT Instruction

Operational Environment Brief

Student Led Discussion

Oral Engineer History Brief

In Ranks Inspection

Tactical Leadership

APA Essay

Formal Memorandum (2)

Garrison Leadership