COMPLETE ELECTRICIAN COURSE

The names of the .pdf (Adobe Acrobat) files containing subcourses/manuals on this CD can be found in the "Table of Contents" (which also contains the links to detailed descriptions). In order to open a specific manual please note the name of the corresponding file, click "Open File", select your CD-ROM drive (if it does not get selected automatically), and then double click that file.

The following will make browsing this CD and reading/printing manuals on it much simpler:

- **You can always exit the full screen mode by pressing the "ESC" button.**
- **Clicking the "Bookmark" or "Thumbnails" tab in each subcourse will allow fast transition between screens.**

If the links below do not work (which is likely to happen if you are not using a recent version of Adobe Acrobat Reader) you can either install the Reader (the installation file is included on this CD), or quit this screen and open subcourses using a different .pdf viewer.

PLANET-E-TECH

Subcourses/manuals on this CD (screen 1 of 3):

View Description	**NAVEDTRA 14026**	▷ CONSTRUCTION ELECTRICIAN BASIC (346 pp)
View Description	**NAVEDTRA 14027**	▷ CONSTRUCTION ELECTRICIAN INTERMEDIATE (286 pp)
View Description	**EN5140**	▷ PREPARE AN ELECTRICAL - MATERIALS TAKEOFF LIST (ELECTRICITY I) (27 pages)
View Description	**EN5141**	▷ INSTALL SERVICE - ENTRANCE SYSTEMS (33 pp)
View Description	**EN5142**	▷ INSTALL ELECTRICAL BOXES (33 pp)
View Description	**EN5143**	▷ INSTALL CONDUIT SYSTEMS (57 pp)
View Description	**EN5144**	▷ INSTALL SYSTEM, EQUIPMENT, AND COMPONENT GROUNDS (41 pp)
View Description	**EN5145**	▷ INSTALL CONVENIENCE DEVICES (69 pp)
View Description	**EN5146**	▷ INSTALL CIRCUIT PROTECTIVE DEVICES (22 pp)

Subcourses/manuals on this CD (screen 2 of 3):

View Description	**EN0113**	▷ CONSTRUCTION PRINT READING (500 pp)
View Description	**EN0158**	▷ UTILITIES I (180 pp)
View Description	**EN0389**	▷ UTILITIES II (127 pp)
View Description	**FM 5-424**	▷ THEATER OF OPERATIONS ELECTRICAL SYSTEMS (238 pp)
View Description	**MD0902**	▷ BASIC ELECTRICITY (37 pp)
View Description	**MD0903**	▷ BASIC ELECTRICAL CIRCUITS (37 pp)
View Description	**MM0702**	▷ BASIC ELECTRICITY MATHEMATICS (71 pp)
View Description	**DOE-HDBK-1011-1-92**	▷ ELECTRICAL SCIENCE (Vol. 1 of 4)
View Description	**DOE-HDBK-1011-2-92**	▷ ELECTRICAL SCIENCE (Vol. 2 of 4)

Subcourses/manuals on this CD (screen 3 of 3):

View Description	**DOE-HDBK-1011-3-92**	▷	ELECTRICAL SCIENCE (Vol. 3 of 4)
View Description	**DOE-HDBK-1011-4-92**	▷	ELECTRICAL SCIENCE (Vol. 4 of 4)
View Description	**DOE-HDBK-1016-1-93**	▷	ENGINEERING SYMBOLOGY, PRINTS, AND DRAWINGS (Vol. 1 of 2)
View Description	**DOE-HDBK-1016-2-93**	▷	ENGINEERING SYMBOLOGY, PRINTS, AND DRAWINGS (Vol. 2 of 2)
View Description	**DOE-HDBK-1092-98**	▷	ELECTRICAL SAFETY (324 pp)
View Description	**MIL-HDBK-1025-10**	▷	SAFETY OF ELECTRICAL TRANSMISSION AND DISTRIBUTION SYSTEMS (180 pp)
View Description	**NAVEDTRA 14256**	▷	TOOLS AND THEIR USES (368 pp)
View Description	**See folder**	▷	ELECTRICIAN LESSONS (11 lessons)

CONSTRUCTION ELECTRICIAN BASIC : NAVEDTRA 14026

Description: The major topics in this training manual are construction support activities, drawings and specifications, power generation and distribution, interior wiring, lighting and communication, and electrical appliances, test equipment, motors, and generators.

Contents:

CONSTRUCTION ELECTRICIAN INTERMEDIATE : NAVEDTRA 14027

Description: The major topics in this Training Manual are construction support, drawings and specifications, generators, electrical distribution, interior wiring, fiber optics and lighting systems, electrical equipment, and alarm systems.

Contents:

PREPARE AN ELECTRICAL - MATERIALS TAKEOFF LIST (ELECTRICITY I) : EN5140

Description: This subcourse is designed to teach the student the identification of electrical symbols, the use of electrical materials, and the skills necessary to extract information from a electrical print and legend.

Contents: ● Subcourse Overview ● Lesson: Prepare an Electrical-Materials Takeoff List ○ Part A: Electrical-Symbol Identification ○ Part B: Print Verification ○ Part C: Print Legends ○ Part D: List of Electrical Materials ○ Part E: Service-Entrance Requirements ○ Practice Exercise ○ Examination ● Appendix A: List of Common Acronyms ● Appendix B: Recommended Reading List ● Appendix C: Metric Conversation Chart

INSTALL SERVICE - ENTRANCE SYSTEMS : EN5141

Description: This course designed to teach the knowledge and skills necessary to perform tasks related to installing service-entrance (SE) systems.

Contents:

INSTALL ELECTRICAL BOXES : EN5142

Description: This subcourse is designed to provide the knowledge necessary to identify and install various common types of electrical boxes, cover plates, and special devices.

Contents:

INSTALL CONDUIT SYSTEMS : EN5143

Description: This subcourse is designed to teach the knowledge necessary to classify and size, cut and thread, bend, and install conduit, and to install conductors.

Contents:

INSTALL SYSTEM, EQUIPMENT, AND COMPONENT GROUNDS : EN5144

Description: This subcourse is designed to teach the knowledge necessary to install grounding electrodes and circuit grounds.

Contents:

INSTALL CONVENIENCE DEVICES : EN5145

Description: This subcourse is designed to teach the knowledge necessary to describe the types and installation procedures of switches, receptacles, and incandescent and fluorescent lighting fixtures.

Contents:

INSTALL CIRCUIT PROTECTIVE DEVICES : EN5146

Description: This subcourse is designed to teach the knowledge necessary to perform tasks related to installing fuses, circuit breakers, and ground-fault circuit interrupters (GFCIs).

Contents: ● Subcourse Overview ● Lesson: Install Circuit Protective Devices ○ Part A: Identifying Circuit Protective Devices ○ Part B: Installing Fuses ○ Part C: Installing Circuit Breakers ○ Part D: Installing Ground-Fault Circuit Interrupters ○ Practice Exercise ● Appendix A: List of Common Acronyms ● Appendix B: Recommended Reading List

CONSTRUCTION PRINT READING : EN0113

Description: Construction print reading is a key skill for technical students. Fortunately, a formal education is not essential for achieving proficiency in this important subject; the study of correspondence courses such as this can provide the essential skills.

Contents:

UTILITIES I : EN0158

Description: As an engineer officer you may be assigned the job of directing some phase of utilities work. To do this efficiently, you must understand the broad, general phases of utilities operations. That is the purpose of this subcourse. It is planned to give you basic knowledge in utilities layout, installation, and operation.

Contents:

UTILITIES II : EN0389

Description: The material in this subcourse broadly covers the principles involved, and the methods and equipment employed, in the design, construction, and operation of electric power and distribution systems, water supply distribution systems, and sewage collection and treatment systems. Large semipermanent installations in a theater of operations such as depots, base hospitals, replacement depots, and the like require fairly extensive, complex utilities systems. The design, construction, rehabilitation (where necessary) and operation of these systems are responsibilities of engineer units. While this course will not make you an expert, it will furnish sufficient basic information to enable you to function as an engineer staff officer or commander in the communications zone of a theater of operations.

Contents:

THEATER OF OPERATIONS ELECTRICAL SYSTEMS : FM 5-424

Description: This manual provides practical information for military personnel in the design, layout, installation, and maintenance of exterior and interior electrical wiring and power-generation systems.

Contents: • ONE. Basic Electrical • 1. Fundamentals • 2.Tools and Equipment ○ I. Interior Wiring ○ II. Wiring Materials • TWO. Wiring Procedures • 3. Design and Layout ○ I. Interior Wiring ○ II. Expedient Wiring • 4. Cable Wiring ○ I. Armored Cable Wiring ○ II. Nonmetallic-Sheathed Cable Wiring ○ III. Cable Fishing with Access ○ IV. Cable Routing Without Access ○ V. Finishing Up • 5. Conduit Wiring ○ I. Rigid Conduit ○ II. Thin-Wall Conduit ○ III. Flexible Conduit ○ IV. Nonmetallic Conduit • 6. Foreign Systems ○ I. Wiring Installations ○ II. Additions to Existing Installations • 7. Switches and Fuses • THREE. Power • 8. Generators ○ I. Mobile Generator Sets and Electric Distribution Systems ○ II. Generator Selection and Operation Principles • 9.Controls and Instruments • 10.Setup, Installation, and Operation Procedures • FOUR. Other Electrical • 11.Building Attachments and Services • 12. Pole Climbing and Rescue • FIVE. Safety and Maintenance Procedures • 13. Safety ○ I. Basic Safety Rules ○ II. Exterior Safety Rules • 14. Maintenance ○ I. Preventive Maintenance ○ II. Circuit Testing ○ III. Generator Maintenance ○ IV. Misc. Equipment Maintenance • Appendix A. Common Electrical Parts and Equipment ... and more

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BASIC ELECTRICITY : MD0902

Description: The purpose of this subcourse is to give an overview of the positive and negative charges on an atom of matter. Free electrons. Electron gains and losses. Attracting and repelling properties of electrical charges. Conductors, insulators, current, and resistance. Positive and negative potential and potential difference. Ohm’s law. Symbols for battery, conductor, switch, lamp, resistors, ohms, voltmeter, ammeter, and simple direct current circuits.

Contents:

BASIC ELECTRICAL CIRCUITS : MD0903

Description: The purpose of this subcourse is to give an overview of simple series and parallel circuits, including equivalent circuits. Simple direct current circuit diagrams. Use of Ohm’s law to solve problems in one unknown, including voltage, voltage drop, resistance, and amperage.

Contents:

BASIC ELECTRICITY MATHEMATICS : MM0702

Description: This is the first of three subcourses that are an introduction to or refreshers for your knowledge of basic electricity. This reviews the mathematics you need to understand the basic operating principles of guided missile systems and electronic and radar circuits. Covered are algebra, logarithms, trigonometry, and vector algebra.

Contents: • LESSON 1: ALGEBRA (The Arithmetic: Addition, Subtraction, Polynomials, Signs of Grouping, Multiplication, Division; The Mathematics: Solving Equations, Exponents, Radicals, and Complex Numbers, Quadratic Equations) • LESSON 2: LOGARITHMS (Terminology: Systems, Parts of a Logarithm; Procedures: Finding the Logarithm of a Number, Negative Characteristics, Antilogarithms, Computations with Logarithms; Powers of Ten: Simplification, Rules, Reciprocals, Numerical Prefixes) • LESSON 3: TRIGONOMETRY (Derivation; Trigonometric Functions: Use, Quadrants, Radian Measure, Graphic Representation) • LESSON 4: VECTOR ALGEBRA (Vector Quantities; Vector Notation; Resultant Vectors; Vector Representation; Calculations: Addition and Subtraction, Multiplication, Division; Raising a Vector to a Power; Root of a Vector)

ELECTRICAL SCIENCE (Vol. 1 of 4) : DOE-HDBK-1011-1-92

Description: The handbook includes information on alternating current (AC) and direct current (DC) theory, circuits, motors, and generators; AC power and reactive components; batteries; AC and DC voltage regulators; transformers; and electrical test instruments and measuring devices.
The Electrical Science handbook consists of fifteen modules that are contained in four volumes. The following is a brief description of the information presented in each module of the handbook.

Contents: ● Module 1 - Basic Electrical Theory ○ This module describes basic electrical concepts and introduces electrical terminology. ● Module 2 - Basic DC Theory ○ This module describes the basic concepts of direct current (DC) electrical circuits and discusses the associated terminology.

ELECTRICAL SCIENCE (Vol. 2 of 4) : DOE-HDBK-1011-2-92

Description: The handbook includes information on alternating current (AC) and direct current (DC) theory, circuits, motors, and generators; AC power and reactive components; batteries; AC and DC voltage regulators; transformers; and electrical test instruments and measuring devices.
The Electrical Science handbook consists of fifteen modules that are contained in four volumes. The following is a brief description of the information presented in each module of the handbook.

Contents: ● Module 3 - DC Circuits ○ This module introduces the rules associated with the reactive components of inductance and capacitance and how they affect DC circuits. ● Module 4 - Batteries ○ This module introduces batteries and describes the types of cells used, circuit arrangements, and associated hazards. ● Module 5 - DC Generators ○ This module describes the types of DC generators and their application in terms of voltage production and load characteristics. ● Module 6 - DC Motors ○ This module describes the types of DC motors and includes discussions of speed control, applications, and load characteristics.

ELECTRICAL SCIENCE (Vol. 3 of 4) : DOE-HDBK-1011-3-92

Description: The handbook includes information on alternating current (AC) and direct current (DC) theory, circuits, motors, and generators; AC power and reactive components; batteries; AC and DC voltage regulators; transformers; and electrical test instruments and measuring devices.
The Electrical Science handbook consists of fifteen modules that are contained in four volumes. The following is a brief description of the information presented in each module of the handbook.

Contents: ● Module 7 - Basic AC Theory ○ This module describes the basic concepts of alternating current (AC) electrical circuits and discusses the associated terminology. ● Module 8 - AC Reactive Components ○ This module describes inductance and capacitance and their effects on AC circuits. ● Module 9 - AC Power ○ This module presents power calculations for single-phase and three-phase AC circuits and includes the power triangle concept. ● Module 10 - AC Generators ○ This module describes the operating characteristics of AC generators and includes terminology, methods of voltage production, and methods of paralleling AC generation sources. ● Module 11 - Voltage Regulators ○ This module describes the basic operation and application of voltage regulators.

ELECTRICAL SCIENCE (Vol. 4 of 4) : DOE-HDBK-1011-4-92

Description: The handbook includes information on alternating current (AC) and direct current (DC) theory, circuits, motors, and generators; AC power and reactive components; batteries; AC and DC voltage regulators; transformers; and electrical test instruments and measuring devices.
The Electrical Science handbook consists of fifteen modules that are contained in four volumes. The following is a brief description of the information presented in each module of the handbook.

Contents: ● Module 12 - AC Motors ○ This module explains the theory of operation of AC motors and discusses the various types of AC motors and their application. ● Module 13 - Transformers ○ This module introduces transformer theory and includes the types of transformers, voltage/current relationships, and application. ● Module 14 - Test Instruments and Measuring Devices ○ This module describes electrical measuring and test equipment and includes the parameters measured and the principles of operation of common instruments. ● Module 15 - Electrical Distribution Systems ○ This module describes basic electrical distribution systems and includes characteristics of system design to ensure personnel and equipment safety.

ENGINEERING SYMBOLOGY, PRINTS, AND DRAWINGS (Vol. 1 of 2) : DOE-HDBK-1016-1-93

Description: The handbook includes information on engineering fluid drawings and prints; piping and instrument drawings; major symbols and conventions; electronic diagrams and schematics; logic circuits and diagrams; and fabrication, construction, and architectural drawings.
The Engineering Symbology, Prints, and Drawings handbook consists of six modules that are contained in two volumes. The following is a brief description of the information presented in each module of the handbook.

Contents: ● Module 1 - Introduction to Print Reading ○ This module introduces each type of drawing and its various formats. It also reviews the information contained in the non-drawing areas of a drawing. ● Module 2 - Engineering Fluid Diagrams and Prints ○ This module introduces engineering fluid diagrams and prints (P&IDs); reviews the common symbols and conventions used on P&IDs; and provides several examples of how to read a P&ID. ● Module 3 - Electrical Diagrams and Schematics ○ This module reviews the major symbols and conventions used on electrical schematics and single line drawings and provides several examples of reading electrical prints.

ENGINEERING SYMBOLOGY, PRINTS, AND DRAWINGS (Vol. 2 of 2) : DOE-HDBK-1016-2-93

Description: The handbook includes information on engineering fluid drawings and prints; piping and instrument drawings; major symbols and conventions; electronic diagrams and schematics; logic circuits and diagrams; and fabrication, construction, and architectural drawings.
The Engineering Symbology, Prints, and Drawings handbook consists of six modules that are contained in two volumes. The following is a brief description of the information presented in each module of the handbook.

Contents: ● Module 4 - Electronic Diagrams and Schematics ○ This module reviews electronic schematics and block diagrams. It covers the major symbols used and provides several examples of reading these types of ● Module 5 - Logic Diagrams ○ This module introduces the basic symbols and common conventions used on logic diagrams. It explains how logic prints are used to represent a component's control circuits. Truth tables are also briefly discusses and several examples of reading logic diagrams are provided. ● Module 6 - Engineering Fabrication, Construction, and Architectural Drawings ○ This module reviews fabrication, construction, and architectural drawings and introduces the symbols and conventions used to dimension and tolerance these types of drawings.

ELECTRICAL SAFETY : DOE-HDBK-1092-98

Description: Electrical Safety Handbook presents the Department of Energy (DOE) safety standards for DOE field offices or facilities involved in the use of electrical energy. It has been prepared to provide a uniform set of electrical safety guidance and information for DOE installations to effect a reduction or elimination of risks associated with the use of electrical energy. The objectives of this handbook are to enhance electrical safety awareness and mitigate electrical hazards to employees, the public, and the environment.

Contents:

SAFETY OF ELECTRICAL TRANSMISSION AND DISTRIBUTION SYSTEMS : MIL-HDBK-1025-10

Description: This handbook is directed to the safety concerns of operators, electricians, and supervisors who perform and supervise operation and maintenance work on electrical transmission and distribution systems.

Contents:

TOOLS AND THEIR USES : NAVEDTRA 14256

Description: This manual provides information on the use and care of selected hand tools and measuring tools. It will explain the types and uses of a large number of tools, a practical application of a selected group of tools, safety requirements, general care, and limited repair. A user must have, choose, and use the correct tools in order to do the work quickly, accurately, and safely. Without the proper tools and knowledge of how to use them, the user wastes time, reduces efficiency, and may face injury.

Contents:

ELECTRICIAN LESSONS : See folder

Description: Various PowerPoint Lessons (converted to .pdf) from ELECTRICIAN COURSE

Contents: • Electrical Materials Takeoff List.pdf • Install Cable and Conduit Systems.pdf • Basic Mathematics.pdf • Rescue an Electrical Shock Victim.pdf • Fundamentals of Power.pdf • Interpret Schematics.pdf • Hand and Special Tools.pdf • Interpret Electrical Prints and Drawings.pdf • Install Service Entrance Systems.pdf • Install Electrical Devices.pdf • Perform Generator Operations.pdf