



AETech Electrical Training Center

AETech, Inc

Steve Arne

Email: office@aetech.com

P.O. Box 2272
Rapid City, SD 57709

Phone: (605) 342-9088

Continuing Education for the Electrical Professional

- Course:** 2023 National Electrical Code Update (Code Changes) (Day 1 of 2)
- Schedule:** 8:00 a.m. – 5:00 p.m. each day; sign-in starts at 7:30 a.m.
- Format:** Lecture format using Power Point slides including Mike Holt's "2023 National Electrical Code Changes" and in-class discussions based on the "2023 National Electrical Code".
- Text book:** Required: "2023 National Electrical Code" Optional: Mike Holt's "2023 NEC Code Changes".
- Instructor:** Steve Arne: Certified Technical Educator, Licensed Electrical Contractor, Master Electrician, Licensed Electrical Inspector
Criteria used to identify successful course completion:
Daily attendance sign-in sheets and instructor observation of attendance/application.
- Objectives:** Provide an emphasis on the structure and content of the NEC, finding and understanding NEC requirements, and a review of important Code changes made in the 2023 edition.

Course Outline:*

Day 1, First 4 hours	(hrs)	NEC Articles 90 through 230
	1.0	NEC Overview and Introduction, Article 90
	0.5	Definitions, Article 100
	1.0	General Installation Requirements - 110
	0.5	Grounded (neutral) Conductor – 200
	1.0	Branch Circuits - 210

Break for Lunch 1.0 HOUR

Day 1, Second 4 hours	(hrs)	NEC Article 240 through 310
	0.5	Feeders - 215
	0.5	Outside Branch Circuits and Feeders- 225
	0.5	Services - 230
	0.5	Overcurrent Protection - 240
	2.0	Grounding and Bonding - 250

*additional topics from the NEC will be covered as applicable
4-15 minute breaks during the day (9am, 10:20 am, 2pm, 3:30pm)
Time for each topic is estimated and may vary depending on student involvement

Additional books and resources are available at our web site:
www.AETech.com



AETech Electrical Training Center

Certificate of Attendance

Attendee:

License #

Course Name: 2023 NEC CODE CHANGES - DAY 1

Code Hours: 8 HRS OF CODE

Course Number (s):

Course Location:

Date(s) Attended:

Steve Arne, Instructor

CONTINUING EDUCATION SIGNUP SHEET

CLASS TITLE: _____
 SPONSOR: _____
 DATE: _____
 CITY: _____
 CEU HOURS: **Code: 0** **Non-Code:** _____
 In order to receive Continuing Education Credit
 You must put down your license number
 If You do not know your number use your social security #
 You will not get credit if you've already attended this class
 No duplication of classes

PLEASE PRINT ALL INFORMATION

<i>Last Name</i>	<i>First</i>	<i>List only your SD License #</i>	<i>Phone Number</i>	<i>E-mail address Please provide if new or changed e-mail address</i>
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AETech Electrical Training Center Seminar Evaluation

Name: _____ Seminar Date: _____
 Address: _____ City/State/Zip: _____
 E-mail address: _____ Phone: _____

1. Overall how would you rate the seminar?	Poor	Fair	Good	Great
2. How important was the subject matter to you?	Poor	Fair	Good	Great
3. How well did the seminar meet your needs?	Poor	Fair	Good	Great
4. Was the presentation interesting and informative?	Poor	Fair	Good	Great
5. Was the technical content appropriate?	Poor	Fair	Good	Great
6. Was it worth your time to attend the seminar?	Poor	Fair	Good	Great
7. How would you rate the instructor skills?				
Knowledge of the subject	Poor	Fair	Good	Great
Responsiveness to questions	Poor	Fair	Good	Great
Ability to present ideas/concepts clearly	Poor	Fair	Good	Great
Use of Power Point Presentation	Poor	Fair	Good	Great

8. If you stayed in a hotel, which one, and would you recommend this hotel again. Why/Why not?

9. What was the most important thing you learned today? _____

10. What concept was the most difficult for you to grasp today? _____

11. What was especially good about the seminar? _____

12. What other seminars would you be interested in attending? _____

Class Room/Facilities Location:

Rate the meeting room facilities overall _____
 What could have been improved and why? _____

Where did you hear about this class? _____

Other comments or suggestions: _____

THANK YOU FOR ATTENDING AETECH SEMINARS !

INSTRUCTOR QUALIFICATIONS

Instructor's Name: Steve Arne Phone # (605) 342-9088

Instructor's Address: PO Box 2272, Rapid City, SD 57709

- SD Inspector License EI 172 – SD Electrical Contractor # EC 1131 – Rapid City Master Electrician License; SD Credentialed Technical Education; Authorized OSHA Construction Outreach Trainer.
- BS Technical Ed, MS Admin Studies, taught apprenticeship 12 years, taught at Western Dakota Technical Institute – Industrial Electrician Program for 19 years. Technical Editorial Director for Mike Holt Enterprises – NEC Code text books/training programs.
- Steve has worked in various positions in the electrical industry since 1974, including electrician, electrical contractor, and full-time instructor and department chair in technical post-secondary education. Steve is licensed in SD as an Electrical Contractor, Master Electrician, and Electrical Inspector.
- Steve now provides electrical continuing education Code Classes and Exam Prep Classes, and has recently added a full-time day-time entry level training program for Apprentice Electricians. He is a State Board Member of the SD Electrical Commission as well as the SD Electrical Council.

STEVEN J. ARNE
PO Box 2272
Rapid City, South Dakota, USA 57709-2272
(605) 342-9088
Website: AETech.com
Email: Steve@AETech.com

EDUCATIONAL ACHIEVEMENTS

- **Master of Science Degree in Administrative Studies:**
Human Resources Emphasis
University of South Dakota, EAFB Branch: May 1995
Cross- Disciplinary Business Administration & Public Administration
- **Bachelor of Science Degree in Education:**
Vocational-Technical Teacher Education
Dakota State University: 1992
- **Electrical Apprenticeship Training Program**
Dakota's Area Joint Electrician Apprenticeship Program: 1978
- **Industry Workshops**
Inspection Technology Institute: Residential Building Consultant class
Bob Pike's Creative Training Techniques Workshop
Web Page Development Online Courses
Allen Bradley Programmable Logic Controllers: PLC 2, PLC 5, MicroLogix
Rockwell Logix 500 Software - Auto Cad 3D - Welding - Auto Body
NFPA 70E Electrical Safety Low Voltage class by E-Hazard
NFPA Electrical Safety in the Workplace Seminar
OSHA 510 Construction Safety
OSHA 500 Construction Safety Outreach Trainer
EPA Lead Renovator Initial Training

WORK EXPERIENCES

- **Electrical Training Seminars: Self Employed**
August 1984- present
Arne Electro-Tech Seminars <http://AETech.com>
320 E Blvd N, Suite 100
Rapid City, SD 57701

Provide continuing education classes to the electrical industry, both apprentice training and journeyman continuing education, specializing in exam preparation seminars. Develop curriculum, secure state board continuing education credit approvals. Design and execute advertising campaigns, coordinate meeting room accommodations for seminars, register participants, deliver training courses.

- **Technical Editorial Director, Mike Holt Enterprises**
April 2004 - present, part time
Mike Holt Enterprises, Inc. <http://MikeHolt.com>
3604 Parkway Boulevard, Suite #3
Leesburg, Florida 34748
Technical editorial work and assist National Electrical Code textbook author Mike Holt in development and revision of training books and videos and answering technical questions from customers
- **Home Inspector: Self Employed**
January 2003 – 2008, part time
BrickKicker Home Inspection
PO Box 2272
Rapid City, SD 57709-2272

Licensed home inspector providing inspections for real estate transactions.

- **Electrical Department Chair/ Instructor: Post-Secondary Technical Education**
August 1984- May 2003
Western Dakota Technical Institute
800 Mickelson Drive, Rapid City, SD 57703

Department Chair for electronics department for the last 5 years and oversee Industrial Electronics, Electronics Technology, and Computer Networking Specialist programs with nine full time instructors and 2 full time lab assistants. Manage departmental budgeting and planning. Develop and coordinate schedules for Electronics Department. Research and write grant proposals.

Program Coordinator and Instructor for Electrician/ Industrial Electronics Department for 17 years. Develop curriculum, work with advisory committee and industry. Design and construct training labs and equipment. Coordinate program curriculum development and delivery and instructional material selection for Industrial Electronics Department. Instruct classes including electrical code, electrical theory, motor control and programmable controllers including personal computer to programmable controller interfacing. Have served on various committees, including curriculum, safety, faculty credentialing committee, and NCA accreditation study steering committee. Arbitrate disputes between faculty and staff members as well as between students as Designated Contact Person for Discrimination/ Harassment issues. Appointed as mentor teacher.

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- **Business Instructor, Curriculum Development: University Business Department**
Fall 1999- Spring 2000 Adjunct Faculty
National American University
321 Kansas City Street
Rapid City, SD 57701

Provide Instruction of University Business Courses: Management Principles,
Labor Relations, Management and Marketing Concepts

- **Curriculum Development Specialist: Organizational Leadership Program**
Summer 1999
National American University
321 Kansas City Street
Rapid City, SD 57701

Developed packaged curriculum for Bachelors Degree Program in Organizational Leadership. Developed syllabi, learning objectives, course outlines, daily lesson plans, lecture notes, and exams for seven courses:

1. Small Business Entrepreneurship
2. Critical Thinking
3. Management and Marketing Concepts
4. Principles of Organizational Leadership
5. Organizational Culture and Leadership
6. Managerial Decision Making
7. Global Marketing Strategies

- **Electrical Inspector: Seasonal**
June 1996-August 1996
SD Electrical Commission
118 W. Capitol
Pierre, SD 57501
Performed electrical inspections on a seasonal basis for the State of South Dakota on residential and commercial electrical installations.
- **Apprenticeship Instructor Electrical Industry Evening Classes**
1984- 1996 taught evening classes in related instruction for the IBEW Electrical Construction Joint Apprenticeship Program

Steven Arne

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- **Adjunct Faculty Business Classes**
Fall 1995
Oglala Lakota Community College
Rapid City, SD

Served as adjunct faculty teaching Business and Society course.

- **Electrical Contractor: Self Employed**
1981 Full Time; Currently Part Time
Arne Electro-Tech Electrical Contracting
PO Box 2272
Rapid City, SD 57709-2272

Design and install commercial and residential electrical wiring systems. Manage business aspects of a small contracting business including project management, quotations, purchasing, scheduling, billing, collections, and accounting. Hire and supervise employees on electrical construction projects. In 1995 and again in 2002 I supervised the volunteer crews who wired the electrical connections for the temporary campground of the Wally Byam Caravan Club, which drew over 1500 camping trailers to Rapid City in 1995 and approximately 1000 in 2002.

- **Electrical Purchasing Agent & Indoor Sales: Electrical Wholesale Distributor**
February 1982- August 1984
Plainsco (Dakota Supply Group)
108 E. Main
Rapid City, SD 57701

Made electrical inventory purchases based on computerized inventory records and Evaluation of customer needs. Customer relations and inside sales support. Electrical project design and project quotations.

- **Journeyman Electrician**
Journeyman 1978-1981, Apprentice 1974-1978
Worked as a construction electrician on various projects requiring knowledge of construction and design of commercial building projects. Increasing levels of project responsibility included foreman position supervising an electrical construction crew.

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- **Member of SD Electrical Commission**
- **SD Electrical Inspector License**
- **SD and Rapid City Electrical Contractor Licenses/ Rapid City Master's License**
- **SD Technical Teaching Credential for Post Secondary Education**
- **International Association of Electrical Inspectors (IAEI) member**
- **South Dakota Electrical Council Member**
- **Board Member/President of Black Hills Chapter SD Electrical Council**

- **Western Dakota Technical Institute (WDTI) / Rapid City Area Schools (RCAS) Committees**
 - Previous WDTI Electronics Department Chair
 - Previous WDTI Industrial Electronics Program coordinator
 - Previous member of WDTI steering committee for NCA Accreditation
 - Previous chair of WDTI NCA subcommittee on Faculty Human Resources
 - Previous member of WDTI Teacher's Credential Committee
 - Previous WDTI Sexual harassment & discrimination designated contact person
 - Previous member of WDTI Mentor corps for new instructors
 - Served on the screening & interview committees during the selection of the WDTI Director, in 2000
 - Previous member of WDTI Curriculum Committee
 - Previous member and Chairman of WDTI Safety Committee
 - Previous member of RCAS District Safety Committee
 - Previous President of WDTI Teacher's Association
 - Previous Secretary of WDTI Teacher's Association
 - Previous Member of WDTI Teacher's Negotiation Committee

- **State committees related to Technical Education**
 - State Committee meeting to develop guidelines for the Mentoring program of the SD Technical Institutes
 - State committee meetings to develop guidelines for the issuing of Credentials to SD Technical Teachers
 - 1999 State Committee meeting on the Perkins Act

Steven Arne

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- **Selected Presentations before 2010**

- April 2009 South Dakota Electrical Council state convention Master of Ceremonies for opening session and Conference Committee Chairman
- January 2009 classes for individual Chapters of SD Electrical Council
- April 2008 South Dakota Electrical Council state convention presented Continuing Education Electrical Code Class
- 2007-2009 coordinated video team selection/travel/accommodations for all 2008 Mike Holt video productions
- February 2010 Panel member in filming Mike Holt's Electrical Estimating video training class
- March 2009 Panel member in filming Mike Holt's Understanding Motor Control video training class
- 2008 Panel member in filming of Mike Holt's 2008 Electrical Exam Preparation video training classes
- 2007 Panel member in filming of Mike Holt's 2008 Understanding the National Electrical Code video training class
- 2007 Panel member in filming of Mike Holt's 2008 NEC Grounding and Bonding video training class
- 2007 Panel member in filming of Mike Holt's 2008 National Electrical Code Changes video training class
- April 2007 South Dakota Electrical Council state convention presenter
- 2005 Panel member in filming of Mike Holt's 2005 Electrical Exam Preparation video training class
- 2005 Panel member in filming of Mike Holt's 2005 Understanding the National Electrical Code video training class
- 2004 Panel member in filming of Mike Holt's 2005 NEC Grounding and Bonding video training class
- 2004 Panel member in filming of Mike Holt's 2005 National Electrical Code Changes video training class
- 2004 Presentation to the American Society of Home Inspectors national conference
- 2004 Presentation to the BrickKicker Home Inspections Franchise National conference
- 2003 Panel member in filming of Mike Holt's Understanding the National Electrical Code, Volume 2 video training class
- 2002 Panel member in filming of Mike Holt's Electrical Code Calculations video training class
- 2001 SD Tech Prep Conference presenter of Teachers Online Web Development class
- 2001 TIE conference presentation of Teachers Online Web Development class
- 2000 SD Tech Prep Conference presenter of Teachers Online Web Development class
- 2000 Fall WDTI In-service presentation of Teachers Online Web Development class

2000 Spring National American University In-service presentation of Teachers
Online Web Development class

2002 Electro-Technology Expo presentation for Electricians Continuing
Education

2001 Electro-Technology Expo presentation for Electricians Continuing
Education

Nov. 2001 Sioux Chapter of SDEC presented Continuing Education Electrical
Code Class

April 2002 South Dakota Electrical Council state convention presented
Continuing Education Electrical Code Class

March 2002 Black Hills Chapter of SDEC presented Continuing Education
Electrical Code Class

March 2001 Black Hills Chapter of SDEC presented Continuing Education
Electrical Code Class

February 2000 Black Hills Chapter of SDEC presented Continuing Education
Electrical Code Class

- **Public training seminars for electrician continuing education**
 - Electrician's Exam Preparation course presented almost monthly through Arne
Electro-Tech seminars
 - Electrician CEU classes on the National Electrical Code presented through Arne
Electro-Tech seminars
- **Interests**
 - I enjoy developing web sites and learning about computer applications including
Distance Learning and On-Line Learning
 - I greatly enjoy reading and writing
- **References will be provided upon request**

RYAN D ARNE
320 E Boulevard North, Rapid City, SD 57701
(605) 389-2277
Website: AETech.com
Email: ryan@aetech.com

Ryan has been the Director of the Apprenticeship Program since the program began in 2012. Creating and building the foundation for a new apprentice electrical training program in the Midwest is a personal life goal he has reached.

The vision he had was to develop an apprentice program for students who want to become an entry-level apprentice electrician with more than just a diploma or associates degree. He wanted a training program that would be solely taught on electrical courses combined with hands on experience. The next few months that followed, Ryan developed the training program with a dedicated lab to make it affordable without general educational classes. The program began with two students and now graduate between 24 -28 students a year. When Ryan was casting his vision, he could find no one else in the Midwest states who offered the type of program he wanted.

The Apprenticeship program has been approved by the South Dakota and Wyoming State Electrical Boards. In Wyoming, the program fulfills their requirement for the apprenticeship related training requirements. South Dakota approves the students 640 hours toward their required 8000 hours of apprentice job experience.

Ryan provides a great educational experience for apprentices. He has trained students with no or little experience to four years of electrical experience and gives them a rewarding experience. Whether it's in the classroom, or jobsite with his students, communication-intent-conduct is foremost. Ryan delivers an excellent and organized presentation in his classes and follows the same through in the lab. Expectations are high for students to be the best they can be. The focus of the apprenticeship class is to serve the electrical industry of contractors with graduates who know and understand their role as an apprentice.

Ryan has been a self-employed electrical contractor in Riverside, California since 2007. He holds licenses in California and South Dakota. Ryan has an Associates Degree in Industrial Electronics and is a member of the SD Electrical Council.

Ryan joined the company at AETech with his father, Steve Arne who has been in the electrical industry for 35 years. Steve is the President/Owner of AETech and the Director of the Continuing Educational classes.

EMPLOYMENT

2012 – Director and Instructor of the Apprentice Electrician Program at AETech Electrical Training Center, Rapid City, South Dakota

2007 – 2012 President of Infinite Power Electrical Contracting, 3008 Floral Ave, Riverside, CA
California C-10 Electrical Contractor's License: 909649

- Custom home wiring, Troubleshooting, service work, Solar power, Industrial and Commercial.

September 2005 – 2007; Electrical Journeyman
University of California, Riverside
900 University Ave., Riverside, CA 92521

- Electrical Maintenance and troubleshooting, motor control, tenant improvement, renovation work and new construction projects.

2002 – 2005 Electrical Journeyman and Foreman
Dalke and Sons Construction: Riverside, CA

Public Works Projects for California State Universities

- Installing commercial wiring systems for electrical power, lighting, voice/data and Fire Alarm systems.

2001 – 2002 Electrical Journeyman
Lon's Electrical Service – San Bernardino, CA

- Installing commercial wiring systems for electrical power, lighting, motor control, troubleshooting for commercial and industrial applications.

1994 – 2001 Electrical Journeyman

- Installing commercial and residential wiring systems for power, lighting, fire alarm and communication systems. Service work was also included in my duties.

SUMMARY:

My entire working career has been in the electrical industry. I love teaching at AETech and pursuing the dream of training individuals who want to become an electrician. Developing a 4 month apprenticeship program that works has been rewarding.

As an electrician, I've always worked efficiently and safely. As a foreman, I consider a safe worksite as a main priority, to stay on schedule and keep a high quality of product. In management, communication is foremost. I've always felt successful in my pursuit of work and education. I value my relationships with students, contractors and employees of AETech.

LICENSES:

- State of South Dakota Electrical Contractor IEC 2964
- State of South Dakota Electrical Journeyman JM 6189
- State of California Electrical Contractors C-10 #909649
- State of California General Journeyman Electrician #113951
- State of South Dakota Apprentice License obtained in 1991 (received at age 14)

EDUCATION: 1996 - 1998 Western Dakota Tech, Rapid City, SD

- Associate Degree in Industrial Electronics
 - AC/DC Electrical Theory
 - Motor Control Theory and Lab
 - Electrical Code Study
 - Programmable Controllers and Lab
 - Wiring Lab
 - Motor Fundamentals and Lab
 - Power Distribution
 - Blueprint Reading
 - Solid State Electronics
 - Electronics Math
- High School Diploma – Stevens High School, Rapid City, SD

CONTINUING EDUCATION SIGNUP SHEET

CLASS TITLE: _____
SPONSOR: _____
DATE: _____
CITY: _____
CEU HOURS: Code: 0 Non-Code: _____
In order to receive Continuing Education Credit
You must put down your license number
If You do not know your number use your social security #
You will not get credit if you've already attended this class
No duplication of classes

PLEASE PRINT ALL INFORMATION

<i>Last Name</i>	<i>First</i>	<i>List only your SD License #</i>	<i>Phone Number</i>	<i>E-mail address Please provide if new or changed e-mail address</i>
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INSTRUCTOR QUALIFICATIONS

Instructor's Name: Steve Arne Phone # (605) 342-9088

Instructor's Address: PO Box 2272, Rapid City, SD 57709

- SD Inspector License EI 172 – SD Electrical Contractor # EC 1131 – Rapid City Master Electrician License; SD Credentialed Technical Education; Authorized OSHA Construction Outreach Trainer.
- BS Technical Ed, MS Admin Studies, taught apprenticeship 12 years, taught at Western Dakota Technical Institute – Industrial Electrician Program for 19 years. Technical Editorial Director for Mike Holt Enterprises – NEC Code text books/training programs.
- Steve has worked in various positions in the electrical industry since 1974, including electrician, electrical contractor, and full-time instructor and department chair in technical post-secondary education. Steve is licensed in SD as an Electrical Contractor, Master Electrician, and Electrical Inspector.
- Steve now provides electrical continuing education Code Classes and Exam Prep Classes, and has recently added a full-time day-time entry level training program for Apprentice Electricians. He is a State Board Member of the SD Electrical Commission as well as the SD Electrical Council.

AETech Electrical Training Center Seminar Evaluation

Name: _____ Seminar Date: _____
 Address: _____ City/State/Zip: _____
 E-mail address: _____ Phone: _____

1. Overall how would you rate the seminar?	Poor	Fair	Good	Great
2. How important was the subject matter to you?	Poor	Fair	Good	Great
3. How well did the seminar meet your needs?	Poor	Fair	Good	Great
4. Was the presentation interesting and informative?	Poor	Fair	Good	Great
5. Was the technical content appropriate?	Poor	Fair	Good	Great
6. Was it worth your time to attend the seminar?	Poor	Fair	Good	Great
7. How would you rate the instructor skills?				
Knowledge of the subject	Poor	Fair	Good	Great
Responsiveness to questions	Poor	Fair	Good	Great
Ability to present ideas/concepts clearly	Poor	Fair	Good	Great
Use of Power Point Presentation	Poor	Fair	Good	Great

8. If you stayed in a hotel, which one, and would you recommend this hotel again. Why/Why not?

9. What was the most important thing you learned today? _____

10. What concept was the most difficult for you to grasp today? _____

11. What was especially good about the seminar? _____

12. What other seminars would you be interested in attending? _____

Class Room/Facilities Location:

Rate the meeting room facilities overall _____
 What could have been improved and why? _____

Poor Fair Good Great

Where did you hear about this class? _____

Other comments or suggestions: _____

THANK YOU FOR ATTENDING AETECH SEMINARS !