



The  
**Electrical  
Board** of Missouri  
and Illinois

# EDUCATION COURSES

## 2019-20 SCHEDULE

### Providing Educational Value to the Industry for 41 years!

*We hope that by making our class schedule accessible via email, you will forward easily to your co-workers, customers and industry associates who may be looking for these seminars/classes which offer pdh's (engineers), JC's and City (contractors) and general knowledge electrical classes for the industry, which are so important to the development of our careers.*

PDH listed by a class - accepted hours for engineering community

JC's listed – for Jefferson County contractor license. They will accept 8 hours of code related classes only; no carryover of hours to next cycle. Current license renewal: January 1, 2019- December 31, 2021.

City listed – accepted hours for City of St. Louis license renewal. 8 hours of code related classes/seminars at time of YOUR license renewal EACH year effective Feb. 2019. Expo 2017 certificates are ONLY accepted in 2019 at time of renewal if it was NOT used for your last renewal. No carry over of hours to following year.

**\*\*Make sure to mark March 12, 2020 for IAEI code conference at our Expo....will help you with your 2020 code hours for license renewal if YOU attend all 8 hours.**

*(If you would like a copy of our printed educational brochure, please email your name and address to [annie@electricalboard.org](mailto:annie@electricalboard.org) or call 636/305-6434, though this booklet has updates not found in printed copy.)*

**\*\*PLEASE NOTE:** We do need a minimum number for EACH class so don't delay if you are interested in registering. We must decide if we have enough to run classes 7 days PRIOR to class scheduled start, so your registration could make a difference.

# **CLASSES**

*(\*Some classes are held only ONCE a year...in FALL or SPRING only.)*

READING ELECTRICAL CONSTRUCTION DRAWINGS (FALL only)	PAGE 13
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## **HALF OR FULL DAY SEMINARS**

**\*\*See Page 17 for half-day seminars offered in St. Louis, Columbia, MO AND Mt. Vernon and Springfield, IL**

**\*\*See Page 1 for March 11-12, 2020 Expo locations/times**

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## **REGISTRATION FORM**

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\*Please scan/email to [annie@electricalboard.org](mailto:annie@electricalboard.org) OR mail it to EBMI, 900 S. Highway Dr., Suite 203,Fenton, MO 63026

**Electrical Board Accepts Mastercard, Visa and American Express**  
**– call office, 636/305-6434 if you wish to pay by credit card.**

### **We also offer other seminars throughout the year including:**

Clean Energy Summit	Page 17
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Emerging Illinois Energy Topics	Page 17
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The  
**Electrical Board** of Missouri and Illinois



St. Charles Convention Center  
St. Charles, Missouri  
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## Comments from previous attendees...

"I try never to miss the expo. I've been attending the last five shows. They are informative and keep me in touch with various vendors that I have done past business with and meet new contacts as well."

"I have nothing to compare too, but I like that the Expo and seminars are all in ONE location. The parking is a huge plus too. I have no problems driving a little farther. The benefits outweigh the little extra travel time."

"I think every year it gets better. I was able to find lots of products that we need for our facility."

"I think it is good for anyone new in the industry to be able to get a good hands on feel for materials used in construction. Being a new engineer out of college, most time is spent behind a desk. If someone doesn't have a good understanding of how construction is actually done, it makes designing hard. Any place to see any kind of typical materials and tools would be helpful for new people in the field."

## EXPO SHOW HOURS

**Wednesday • March 11, 2020**

1:00 pm to 7:00 pm

**Thursday • March 12, 2020**

9:00 am to 5:00 pm

**NO COST TO ATTEND EXPO and view 200+ booths of electrical products/services.**

## What the Internet/apps don't offer you... that Expo 2020 can provide ALL IN ONE VENUE:

- See firsthand and handle new products available...lighting, tools, wiring, generators, etc.
  - Find out more about energy efficient products/services that could save \$\$\$ for your company;
  - Meet many different manufacturers which allows you to discuss YOUR specific needs with them;
  - Bring younger members in your company so they can gain exposure to the industry;
  - You can compare various products/services and find out which will work best in your job setting.
  - Network with associates from all segments of the industry who will be in attendance.
- Over 2400 attended in 2017.

## EDUCATIONAL SEMINARS OFFERING PDHs/CODE CONTACT HOURS

(There is an additional cost for seminars.)

We offer 10+ seminars during the two-day event, beginning early each day. There is an additional cost for these seminars (1 or 2 day passes). Please visit our website, [www.electricalboard.org](http://www.electricalboard.org) in mid-January, 2020 for complete information regarding these seminars and to sign up for Expo only and/or seminars as well. You can receive PDHs (engineers) and Code contact hours (contractors) for most seminars and then view the displays at hours shown.

## IAEI CODE CONFERENCE – Analysis of the 2020 NEC (March 12th)

(Attendance at this conference will fulfill the City of St. Louis and Jefferson County requirements for continuing education... provided THE LICENSEE attends the entire 8 hour session. The City is requiring 8 Code hours each year at time of license renewal. We have 400+ attendees for this conference most years. In the past, we turned away people who wanted to register at the door... so make sure you take advantage of this seminar and register by February. (This is NOT part of the one or two day passes. Individual cost for this conference.)

Call the EBMI office at **636.305.6434** for more information,  
or visit our web site at [www.electricalboard.org](http://www.electricalboard.org)

900 S. Highway Drive • Suite 203 • Fenton, MO 63026

Email: [bill@electricalboard.org](mailto:bill@electricalboard.org)

To: Industry Associates

From: Phil Wentz, Chairman  
The Electrical Board Education Committee

The Electrical Board of Missouri and Illinois (EBMI) is entering its **42nd year** of providing educational courses on various electrical topics to the industry.

We offer courses that provide useful and practical information. Hopefully, these courses will assist participants with the knowledge enhancement process, which is so vital to the continued success of the individual, and increase their contribution to their firm.

Our emphasis is on the **operation and applications** of the various electrical components being used in the industry. These courses are not intended as “manual skills training” for individuals but rather emphasize the theory, principles and applications associated with the various electrical components and systems that are discussed. Introduction of new and changing technologies will also be presented wherever possible.

If you have any questions concerning the courses, please call the Electrical Board office at 636/305-6434.

**I UNDERSTAND THESE COURSES DO NOT ADDRESS WIRING SKILLS AND PROFICIENCIES, AND THAT THE ELECTRICAL BOARD, ITS OFFICERS AND INSTRUCTORS ARE HERE-BY RELEASED FROM ANY LIABILITY ARISING FROM ANY USE OR APPLICATION OF THE KNOWLEDGE GAINED FROM THESE SEMINARS/COURSES.**

## **REGISTRATION PROCEDURES & CLASS INFO**

- 1) **\*\*To confirm your position in a class/seminar, the easiest way is to complete registration form on page 16 and:**
  - \*Scan/email it to [annie@electricalboard.org](mailto:annie@electricalboard.org) or
  - \*Mail to EBMI, 900 S. Highway Dr.-Suite 203-Fenton, MO 63026
  - \*NOTE: You can call in to sign up for a class, BUT we will need to complete all information with you that is contained on registration form over the phone. So, it may save you time if you scan/email registration form.
- 2) **Advanced rate given ONLY if your REGISTRATION FORM is received 2 weeks prior of class.** (Payment can follow later.) If form is not received two weeks prior to class, the late registration fee will be applied.
- 3) **Courses will be cancelled one week prior to class start, if there is not sufficient enrollment.** This allows time for others to transfer to another class. 100% refund is given should we need to cancel your class. Each course has a minimum number of students that must be reached before we can offer it, so please make sure you send in your registration form early as this helps in determining if a class will be held! ONE registration can make a difference!
- 4) **Payment must be received by the FIRST night of class,** unless you call EBMI in advance to indicate payment is being processed within your company and full payment will be received shortly after class begins. We realize some companies cannot process as quickly, so we will work with you.
- 5) **We do accept Mastercard, Visa and Amex but we ask that you call us when using credit card and we will email or mail receipt to you.**
- 6) Please understand that for reasons beyond our control, some classes may be cancelled and rescheduled, so **your class may go one or two weeks past the nights shown in the booklet.** Most of our instructors work full-time and assist us in the evening. Sometimes, they may be called out of town with business or the weather may deem it necessary to cancel class. We ask you to understand that the possibility for such changes might occur during your class and may cause you to go a few classes past the date scheduled in booklet.
- 7) **Changes in Jefferson County (JC) Contact Hours requirements 2019: Students must have a minimum of 8 code-related pre-approved real class time hours – per 3 year cycle... (Current licensing renewal cycle is January 1, 2019- December 2021). They will NO LONGER allow any contact hours to be carried over to next cycle.** Students must attend 100% of the actual classroom instructions. They will allow a student to be absent 10% of the required hours, but only for reasons of personal illness, illness or death in their immediate family or hazardous road conditions. **It is the STUDENTS' responsibility to submit certificate or letter to Jefferson County office WITHIN 30 days AFTER class ends or they will not approve at later date.**
- 8) **REFUND POLICY - If you withdraw before the class starts, we will refund the enrollment fee minus the registration fee. After the first night of class, you will receive 50% of enrollment fee. After the second night, 25% will be refunded. No refunds will be made after the third night of class. Substitutions can be made.**

**GRADING POLICY** -Each student, provided they attend the required number of classes (80%) and perform coursework to pass the class, will receive a certificate of completion for this class. Many companies use this for reimbursement. However, if your company needs a letter showing the student's grade and attendance record, in addition to the certificate of completion or attendance, please check the attendance and grade information on registration form. This must be done in advance of the class!! We must also be provided with contact name. If they attend the classes, but do not pass the course, they will receive a certificate of attendance. If they are unable to attend the required number of classes, they will not receive a certificate. Each instructor will go over the required number needed on the 1<sup>st</sup> night of class, so please pay close attention.

# PRACTICAL APPLICATIONS OF ELECTRICAL EQUIPMENT & DEVICES

*(Offered only in the Fall\*)*

**INFORMATION:** This course provides a working knowledge of all segments of the electrical industry and how these segments interact in the construction and MRO markets. It gives a hands-on overview of electrical products and their applications for industrial, commercial and residential applications. It is ideal for warehouse, clerical and purchasing personnel (as well as entry level sales personnel) desiring an understanding of the electrical construction industry and its practical applications. It includes terminology and definitions put into laymen's terms for a basic understanding of our industry.

- |  |   |
|--|---|
| 1. Overview of the Electrical Industry     | 5. Fastening & Supporting; Splicing & Terminating         |
| 2. Distribution Equipment & Motor Controls | 6. Wiring Devices; Signaling Equipment; Lighting Controls |
| 3. Raceways, Boxes, Enclosures & Fittings  | 7. Lamps & Lighting Fixtures                              |
| 4. Wire, Cables & Accessories              | 8. Heating & Ventilating Equipment; Electricians' Tools   |

**TIME AND DATES:**

Sept. Class\*

Tuesday

6:00-8:30 p.m.

8 Sessions

Begins Sep.17, 2019

and ends Nov. 5, 2019

**Held in Fall only.**

**LOCATION:**

Frost Supply

2429 Schuetz

Maryland Heights, MO 63043

**INSTRUCTOR:**

DAN ASARO

Frost Supply

**COST:** Advanced - registrations must be received 2-weeks prior to class start.

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 260	\$ 310
Employees of Electrical Board member firms	\$ 200	\$ 250

Includes study manual, certificate of completion and registration fee of \$75 which is non-refundable.

**REGISTRATION FORM ON PAGE 16**

# FUNDAMENTALS OF ELECTRICAL THEORY

*(Offered only in the Spring\*)*

**Course outline:** The course is designed and will be taught to provide a fundamental understanding of the principles, terms, physical laws and mathematical concepts used to explain electrical circuit behavior. Areas covered will be an overview of D.C. and A. C electrical theory and introduces the student to electrical components and magnetic concepts, Ohm's Law, Kirchhoff's current and voltage Laws, and the calculation of single phase and three phase power. There will be many experiments where meters are used to verify calculated results. This instruction will be done with a short lecture on subjects and the class labs done by the students working as teams to obtain, record and analyze results. Electrical and job site safety will also be covered for the students. Labs and example problems will be taken from new textbook "Mike Holt's Illustrated Guide to Basic Electrical Theory 3<sup>rd</sup> Edition". Homework assignments do account for a portion of the grade.

1. Math/Algebra review  
Basic Electrical Concepts
2. Basic Circuit Components
3. Circuits, Laws and Measurements
4. Multiple-load Circuits
5. Magnetism and Electromagnetism
6. Power in AC Circuits
7. Three Phase AC Circuits
8. Inductance
9. Capacitance
10. Transformers, Motors (AC, DC)

## TIME AND DATES:

**Held in Spring only.**

### Feb. Class\*

Tuesday

6:00-8:30 p.m.

10 sessions

Begins February 11, 2020

Ends on April 21, 2020

**(No Class on March 10<sup>th</sup>)**

## LOCATION:

EBMI  
900 S. Highway Drive  
Fenton, MO 63026

## INSTRUCTOR:

MILT MURRY

**COST: Advanced** - registrations must be received 2-weeks prior to class start.

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 290	\$ 340
Employees of Electrical Board member firms	\$ 230	\$ 280

Includes study manual, certificate of completion and registration fee of \$75 which is non-refundable.

**REGISTRATION FORM ON PAGE 16**

# UNDERSTANDING MOTOR CONTROLS

**PDH: 16 / JC & City: 16-code**      **(OFFERED ONLY IN THE SPRING\*)**

**INFORMATION:** This course is designed to teach a fundamental understanding of standard Motor Control terminology and equipment design. The basic operation of various motors will be presented. However, the major emphasis of this course will be to understand how and why to correctly control a motor. Considerable emphasis will be placed on relating the physical motor control components to symbols on drawings and how they interrelate in schematic or ladder diagrams. Components discussed in this course will include, but not be limited to, circuit breakers, disconnects, fuses, starters, relays, timers, limit-switches, push buttons, starting transformers and enclosures.

- |   |  |
|---|--|
| 1. Introduction and Definitions             | 5. Other controls and pilot devices    |
| 2. Control Schematics and<br>Common Symbols | 6. Motor reversing topics              |
| 3. Magnetic Control Topics                  | 7. Sequencing and Application<br>notes |
| 4. Overload Protection Practices            | 8. Review and Final Exam               |

**Held in Spring only.**

**LOCATION:**  
Frost Supply, 2429 Schuetz Road  
Maryland Heights, MO 63043

**Feb. Class\***  
Tuesday- 8 Sessions  
6:00-8:00 p.m.

Begins Feb. 11, 2020  
and ends March 31, 2020

**Instructor**– DAN ASARO,  
Frost Supply

	<b><u>Advanced</u></b>	<b><u>Late</u></b>
Employees of non-member firms	\$ 300	\$ 350
Employees of Electrical Board member firms	\$ 240	\$ 290

**REGISTRATION FORM ON PAGE 16**



# VARIABLE FREQUENCY DRIVES

## PDH: 16

**INFORMATION:** This course is designed to provide a practical knowledge of Variable Frequency Drives and of the Drive Applications. The intent of this course is to familiarize students with the features of different types of drives, active demo programming is included throughout the course.

1. Types of Variable Speed Drives
2. What is an Variable Frequency Drive
3. VFD functional drawings & macros
4. Power Switching Devices
5. Protective Devices & Circuits
6. Application Considerations, Interface Capabilities, Set-up Adjustments
7. Applications associated with HVAC and pumping industries
8. Programming, Troubleshooting and Preventive Maintenance

## Sept. Class

Tuesday – 8 Sessions

6:00-8:00 p.m.

Begins Sep. 17, 2019

and ends Nov. 5, 2019

**Held in Fall only.**

## **LOCATION:**

Control Technicians, Inc.  
102 Trade Center Dr.,  
St. Peters, MO 63376

## **INSTRUCTOR:**

PAUL TUCKER  
Control Technicians, Inc.

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 300	\$ 350
Employees of Electrical Board member firms	\$ 240	\$ 290

## **HARSH and HAZARDOUS AREA LOCATIONS**

**PDH: 4 / JC & City: 4- code**

**(Half Day Seminar)**

**INFORMATION:** This seminar will provide a basic understanding of Harsh and Hazardous Areas; how they are defined, proper product installation and maintenance, and protection methods in accordance with NEC 500-516.

1. Importance of Properly Installed Explosion Proof Equipment
2. Components of Combustion
3. NEC Classifications of Hazardous areas
4. Equipment for Hazardous Areas
5. Seals, Code Changes for Articles 500-516

## Oct. Seminar

Thursday, October 3, 2019

8:00 a.m. – 12:00 noon

**LOCATION: - EBMI Office**

900 S. Highway Dr.- 63026

**INSTRUCTOR:**

KURT SCHULZ

Eaton's Crouse-Hinds Division

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$160	\$210
Employees of Electrical Board member firms	\$100	\$150

# GROUNDING

**PDH: 10 / JC & City: 10- Code**

**INFORMATION:** This course is intended to provide a clearer understanding on the subject of Grounding. The basic physics of grounding will be reviewed and compared to the National Electrical Code. We are recommending this course to electricians, electrical contractors, consulting engineers, utility and industrial maintenance personnel.

1. Definitions; Purposes; Physics; Electrical Systems
2. Grounding Electrical Systems; Main Bonding Jumpers; Clearing Ground Faults & Short Circuits
3. Grounding Electrode Systems; Equipment Grounding Systems;
4. Separately Derived Systems
5. Grounding at more than One Building; Ground Fault Protection; Healthcare; Special Locations

**TIME AND DATES:**

**Sept. Class**

Thursday  
6:00-8:00 p.m.  
5 Sessions  
Begins Sept. 19, 2019  
and ends Oct. 17, 2019

**Feb. Class**

Thursday  
6:00 -8:00 p.m.  
5 sessions  
Begins Feb. 6, 2020  
And ends on March 5, 2020

**LOCATION:**

Electrical Board Office  
900 S. Highway Dr  
Fenton, MO 63026

**INSTRUCTOR:**

PHIL WENTZ  
McClure Engineering

**COST: Advanced** - registrations must be received 2-weeks prior to class start.

	<b><u>Advanced</u></b>	<b><u>Late</u></b>
Employees of non-member firms	\$ 310	\$ 360
Employees of Electrical Board member firms	\$ 250	\$ 300

Includes study manual, certificate of completion and registration fee of \$75 which is non-refundable

**REGISTRATION FORM ON PAGE 16**

# ELECTRICAL POWER SYSTEMS

PDH: 25 / JC & City: 25-code

(OFFERED ONLY IN THE FALL\*)

**INFORMATION:** This course is directed to maintenance personnel, electrical designers, electrical contractors, electrical distributors, but not geared to engineers. More for those interested in acquiring a BASIC knowledge regarding the design of electrical power systems. Focus is on commercial/industry low voltage systems, not residential. Some math background is involved for this class. Book will be used for reference only.

1. Introduction & Fundamentals
2. System Configuration & Sizing
3. System & Equipment Grounding
4. Conductors & Transformers
5. AC Motors, Starters & Drives
6. Voltage Drop & Power Factor Correction
7. Short Circuits, Breakers & Fuses
8. Power System Protection
9. Overcurrent Coordination
10. Power Quality Considerations

**Held in Fall only.**

**Sept. Class\*** – Minimum 8 students

Monday – 10 sessions

6:00-8:30 p.m.

Begins Sep. 16, 2019

and ends Nov. 18, 2019

**LOCATION:**

Ameren, 1901 Chouteau , 63103

**INSTRUCTOR:**

RANDY SCHLAKE, Ameren

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 360	\$ 410
Employees of Electrical Board member firms	\$ 300	\$ 350

**COST:** Advanced - registrations must be received 2-weeks prior to class start. Includes study guide, certificate of completion and registration fee of \$50 which is non-refundable.

**REGISTRATION FORM ON PAGE 16**

**UNDERSTANDING THE  
NATIONAL ELECTRICAL CODE  
(Based on 2017 N.E.C.)**

**PDH: 60 / JC & City: 60-code**

**INFORMATION:** This detailed course is designed to unlock the mystery, clarify the gray areas, and the how and where to apply the code. This class is **based on the 2017 N.E.C.** A study manual and workbook with questions **are included** in class fees.

Please bring your own 2017 Code Book. If you need a 2017 Code Book, add \$95 to the class fees below. Tabs for code books (optional) are \$17.50.

**TIME AND DATES:**

**Sept. Class**

**Monday** - 20 Sessions

6:00-9:00 p.m.

Begins Sep. 9, 2019

and ends Feb. 10, 2020

(Class will not be held on

Sept. 16<sup>th</sup>, Dec. 23<sup>rd</sup> and 30<sup>th</sup>)

**Sept. 2019 class already filled  
SIGN UP FOR SEPT. 2020 CLASS**

**LOCATION:**

Electrical Board Office

900 S. Highway Dr.

Fenton, MO 63026

**INSTRUCTOR:**

Rick Heyman

City of St. Louis

**COST:** **Advanced** - registrations must be received 2-weeks prior to class start.

	<b><u>Advanced</u></b>	<b><u>Late</u></b>
Employees of non-member firms	\$ 530	\$ 580
Employees of Electrical Board member firms	\$ 470	\$ 520

Includes study manual, workbook with questions, certificate of completion and registration fee of \$100 which is non-refundable

**\*\*\* (A 2017 Code book is also required. If you need one, please add \$95 to the above class fees.) Order early as we have a limited supply on hand.**

**REGISTRATION FORM ON PAGE 16**

# NATIONAL ELECTRICAL CODE CALCULATIONS

This class is based on the 2017 N.E.C  
OFFERED ONLY IN THE SPRING\*

**PDH: 36 / JC & Code: 36-code**

**INFORMATION:** This detailed course is designed to unlock the mystery, clarify the gray areas in performing code calculations. A study manual with questions **is included** in class fees.

**PRE-REQUISITE:** YOU HAVE TAKEN A CODE CLASS IN THE LAST 3 CODE CYCLES (2011 – 2014- 2017). ONLY CODE CLASSES WITH A MINIMUM 24 HOURS OF CLASS TIME WILL BE ACCEPTED. SUBMIT A COPY OF YOUR CERTIFICATE OF COMPLETION ALONG WITH YOUR REGISTRATION FORM.

A 2017 Code Book is required for this class. If you need a 2017 Code Book, add \$95 to the class fees below.

**Held in Spring only.**

**LOCATION:**

EBMI Office  
900 S. Highway Dr.  
Fenton, MO 63026

**TIME AND DATES:**

Feb. Class\*

Wednesday  
6:00-9:00 p.m.  
12 Sessions  
Begins Feb. 26, 2020  
(No class on March 11<sup>th</sup>)  
And ends May 20, 2020

**INSTRUCTOR:**

MICHAEL SMITH – Schaeffer Electric

**COST:** Advanced - registrations must be received 2-weeks prior to class start.

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 410	\$ 460
Employees of Electrical Board member firms	\$ 350	\$ 400

Includes study manual, workbook with questions, certificate of completion and registration fee of \$100 which is non-refundable

\*\*\* (A 2017 Code book is also required. If you need one, please add \$95 to the above class fees.)

# PROTECTION OF ELECTRICAL SYSTEMS

(Full Day Seminar – bring 2017 code book for reference)

PDH: 8 / JC & City: 8-code

**Conductors:** The installation of cables in wood and metal framing, shallow grooves, behind panels that allow access and surface mounted; Installation of cables or conductors in the earth; Explain the effects of chemicals, water, direct sunlight and other conditions; Explain overcurrent protection and short circuit protection; Importance of clearances for feeders and service conductors; Explain why fill ratio is important and affects ampacity of conductors.

**Equipment:** Sizing equipment for available fault current; how to determine fault current and why it is important; selecting the correct overcurrent devices; importance of signage NFPA 70E commercial not dwellings; the separation of arcing parts from combustible material; explain working clearances; minimizing shock hazards for personnel.

## TIME AND DATES:

### Sept. Seminar

Thursday, September 12, 2019

7:30 am - 4:30 pm

**LOCATION:** EBMI Office

900 S. Highway Dr.  
Fenton, MO 63026

**INSTRUCTOR:**

Michael Smith – Schaeffer Electric

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 185	\$ 235
Employees of Electrical Board member firms	\$ 125	\$ 175

# LIGHTING CONTROLS FOR NONRESIDENTIAL BUILDINGS

(Co-sponsored with the Illumination Engineering Society (IES) – St. Louis Section)

PDH: 4

(Half Day Seminar)

**Description:** This seminar will help you identify lighting control strategies based on application needs; Design and commission a lighting control solution; analyze your control solutions in order to satisfy energy code standards and choose appropriate lighting control equipment for your project.

- \* Introduction to Lighting Controls
- \* Commercial Building Energy Codes
- \* Lighting Control Equipment
- \* Lighting Control Design

### Nov. Seminar

Wednesday, November 13, 2019

8:00 am - 12:00 noon

**LOCATION:** EBMI Office

900 S. Highway Dr.  
Fenton, MO 63026

**INSTRUCTOR:**

Jeff Stoyanov  
Vector Electrical Sales

	<u>Advanced</u>	<u>Late</u>
COST: Employees of non-member firms	\$ 210	\$ 260
Employees of Electrical Board/IES member firms	\$ 150	\$ 200

# TRANSFORMERS

**PDH: 4 / JC & City: 4-code (Half Day Seminar)**

**INFORMATION:** This seminar will provide a basic understanding of transformer operation, calculations, installation, and NEC requirements.

1. Transformer selection, application and basic calculations.
2. Unit Substation and pad mount transformers.
3. Energy efficient and harmonic mitigation transformers.
4. Installation and application considerations for Transformers

Sept. Seminar  
Wednesday  
September 18, 2019  
8:00 am -12:00 noon

April Seminar  
Thursday  
April 16, 2020  
8:00 am -12:00 noon

**LOCATION:**  
EATON  
62 Soccer Park Dr., Fenton, MO 63026

**INSTRUCTOR:**  
Greg Haub  
Eaton

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$160	\$ 210
Employees of Electrical Board member firms	\$100	\$ 150

## READING ELECTRICAL CONSTRUCTION DRAWINGS

**3 evening seminar – (Offered Only in the Fall)**

**INFORMATION:** This course is designed as an introductory level understanding of electrical construction plans and drawings. This group could include but not be limited to Manufacturers Agents, Utility Personnel, Plant Maintenance, Building Design Professionals, Electrical Estimators and anyone else using electrical drawings.

1. Reading Scales; Floor Plans; Site Plans; Elevations; Symbols
2. Electrical Floor Plans; Wiring; One Line Diagrams; Schedules
3. Relaying; Controls; Details; Auxiliary Systems; Specifications

### Oct. Class

Wednesday, Oct. 2, 9 and 16, 2019  
6:00 – 8:30 p.m.

**LOCATION:**  
Ross & Baruzzini  
#6 South Old Orchard Ave., 63119

**INSTRUCTOR:**  
Warren Kohm  
Ross & Baruzzini

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 230	\$ 280
Employees of Electrical Board member firms	\$ 170	\$ 220

**COST:** Advanced - registrations must be received 2-weeks prior to class start. Includes study guide, certificate of completion and registration fee of \$50 which is non-refundable.

# ELECTRICAL SHOCK & ARC FLASH PROTECTION

## **PDH: 4 (Half Day Seminar)**

**INFORMATION:** In this half day seminar, Ed will discuss Shock Hazard and Arc Flash Analysis (NFPA 70E-2018 and IEEE 1584) and how Arc Flash is a serious workplace hazard.

What is arc flash?  
Discuss arc flash terminology.  
Overview of various codes and standards.  
Discuss how an arc flash affects daily work activities.  
Compare arc flash evaluation methods. NFPA Tables & IEEE Calculations.

Mitigation techniques – De-energize; Energized work permit  
How to reduce arc energy; Warning signage; PPE for flash protection.  
Shock Hazard Analysis: Safe Work Practices; Exposure voltage; Boundaries; PPE for shock protection; Energized work permit

### Oct. seminar

Friday, October 18, 2019

8:00 -12:00 noon

**LOCATION:** EBMI Office

### Feb. Seminar

Thursday, February 13, 2020

8:00 – 12:00 noon

**LOCATION:** EBMI Office

**Instructor: ED SCHERRY, Scherry Engineering**

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 170	\$ 220
Employees of Electrical Board member firms	\$ 110	\$ 160

## ARC FLASH CALCULATIONS PROCESS AND PITFALLS

### **PDH: 3**

Provide an understanding for design professionals who perform arc flash hazard calculations of the evolution of the analysis for the hazardous condition. A distinction needs to be understood as to how a bus is protected in limiting the arcing incident. The arcing fault current is different than the bolted fault current. Arc flash energy is a result of the arcing current, the time that the arc exists and the distance from the arc, as well as maintenance of equipment. Arc flash hazard is not predictable and the calculations are educated approximations. Investigation of the available arc flash energy needs to be accomplished during design and not after the fact. More stringent design and specification of equipment is required. Will learn: What is involved in performing an Arc Flash Hazard Analysis? Discuss some limitations of arc flash evaluation techniques. Demonstrate how protective device adjustments and distance can assist in reducing the arc flash hazard. What engineering techniques can be used to provide mitigation of an arc flash?

### Nov. Seminar

Thursday, November 7, 2019

8:00 - 11:00 a.m.

**LOCATION:**

EBMI Office

900 S. Highway Dr.

Fenton, MO 63026

**Instructor: ED SCHERRY, Scherry Engineering**

**COST: Advanced** - registrations must be received 2-weeks prior to seminar start. Includes study guide, certificate of completion and registration fee of \$30 which is non-refundable.

	<u>Advanced</u>	<u>Late</u>
Employees of non-member firms	\$ 170	\$ 220
Employees of Electrical Board member firms	\$ 110	\$ 160



# **VALUE FOR YOUR COMPANY...**

## **MEMBERSHIP**

*Why not save YOUR COMPANY money by joining the Electrical Board. If your company is putting in several students, it may make sense for your company to join EBMI as a corporate member. Take advantage of the member rates, which are then available for fall/spring semesters for all of your employees. Check out membership information on our website as well as viewing all current members of EBMI...[www.electricalboard.org](http://www.electricalboard.org), email [bill@electricalboard.org](mailto:bill@electricalboard.org) or [annie@electricalboard.org](mailto:annie@electricalboard.org) or call us at 636/305-6434 to learn more.*

## **KNOWLEDGE IS POWER**

*\*We know that everyone's schedules are different, so we have offered half-day and full-day seminars as well as evening weekly courses on a variety of electrical topics to ensure everyone in industry can take advantage of classes/seminars.*

*\*Our instructors are part of the electrical industry and give you not only the basics for their class, but also invaluable personal experiences.*

## **OUTLYING AREAS**

*Are you in an outlying area, but in need of relevant courses in your area? We have several half-day seminars such as Arc Flash, Grounding (provided we can get enough students) that we can work with you to provide in these areas (or others):*

**ILLINOIS** – Springfield, Mt. Vernon,

**CENTRAL/ SOUTHERN MISSOURI** – Columbia, Cape Girardeau

**For more information on EBMI events/education programs, please call the EBMI Office at 636-305-6434 or e-mail [bill@electricalboard.org](mailto:bill@electricalboard.org) or check our website at [www.electricalboard.org](http://www.electricalboard.org).**

# REGISTRATION FORM

(PLEASE PRINT CLEARLY)

SEPTEMBER - DECEMBER 2019       JANUARY – MAY 2020

Advanced registrations must be received 2-weeks prior to first night to receive advanced rates! Many classes require minimum # of students so the earlier you enroll, the more it helps to determine if a class will be held. We must determine if class can be held ONE WEEK prior to start date. (This form can be mailed or scan/email to [annie@electricalboard.org](mailto:annie@electricalboard.org).)

<u>CLASS NAME</u>	<u>REGISTRANT'S NAME</u>	<u>Advanced</u>	<u>Late</u>
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____
_____	_____	\$ _____	\$ _____

(Please make copies of this form ...if more than 3 enrollments.)

**CODE Class Participants ONLY:**     In addition, I need 2017 Code book @\$95.  
 Tabs for code books (optional) @ \$17.50.

**WE ACCEPT**



**\*If paying by credit card, please call EBMI office, 636/305-6434.**

*A STUDENT SHOULD UNDERSTAND THESE COURSES DO NOT ADDRESS WIRING SKILLS AND PROFICIENCIES, AND THAT THE ELECTRICAL BOARD, ITS OFFICERS AND INSTRUCTORS ARE NOT RESPONSIBLE FOR ANY LIABILITY ARISING FROM ANY USE OR APPLICATION OF THE KNOWLEDGE GAINED FROM THESE COURSES.*

Students attending over 80% of classes and completing recommended course work will receive a **CERTIFICATE OF COMPLETION** at the end of class. For most, this is all that is required after the class. **Students needing Jefferson County hours (JC's), please see Page 3 – Section 7.** However, for reimbursement, some companies require other information. If so, please check below.

Do you need attendance record and grade for reimbursement?       Yes       No

Signature \_\_\_\_\_

Authorized by (Please print) \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Work Phone: \_\_\_\_\_ and/or Cell#: \_\_\_\_\_

E-mail \_\_\_\_\_

TO REGISTER....

**PLEASE COMPLETE FORM ABOVE AND SEND IN USING BEST OPTION BELOW ...**

**SCAN/ E-MAIL FORM:**    [annie@electricalboard.org](mailto:annie@electricalboard.org)

**MAIL FORM:**    The Electrical Board, 900 S. Highway Dr.-Ste. 203, Fenton, MO 63026

**Any questions regarding registration, please call 636/305-6434.**

## **SEVERAL HALF-DAY ANNUAL PROGRAMS....**

### **In St. Louis & Columbia , MO** **AND Mt. Vernon & Springfield, IL** **CO-SPONSORED WITH AMEREN**

\*For more information regarding these programs (since the committees may be still finalizing some of the topics), please call EBMI office, 636/305-6434 OR email [bill@electricalboard.org](mailto:bill@electricalboard.org). We will be happy to forward seminar flyer to you when it becomes available or go online @ [www.electricalboard.org](http://www.electricalboard.org) for details.

#### **ADVANCED RESERVATIONS ARE REQUIRED!**

COST: \$35 for EBMI members / \$55 for non-members

IF reservations are made 10 days PRIOR to seminar date;

**ADD \$15 TO EACH REGISTRATION AFTER THIS TIME**

### **CLEAN ENERGY SUMMIT - 4 pdh's**

(Formerly our Renewable Energy Summit)

**Thursday, August 15, 2019 - 7:55 a.m. – 12:00 noon**

Ameren Auditorium, 1901 Chouteau, St. Louis, MO 63103

**Tuesday, August 27, 2019 - 7:55 a.m. – 12:00 noon**

Millbottom, 400 W. Main St., Jefferson City, MO 65101

### **ELECTRICAL SAFETY SYMPOSIUM – 4 pdh's**

**Wednesday, October 30, 2019 - 7:55 a.m. – 12:00 noon**

Ameren Auditorium, 1901 Chouteau, St. Louis, MO 63103

### **ILLINOIS ELECTRIC POWER ISSUES – 4 pdh's**

**September 24, 2019 - 7:55 a.m. – 12:00 noon**

Lincoln Land Community College (Trutter Center),

5250 Shepard Rd., Springfield, IL 62794

#### **AND**

**October 9, 2019 - 7:55 a.m. – 12:00 noon**

Doubletree by Hilton

222 Potomac Blvd., Mt. Vernon, IL 62864

### **ENERGY EFFICIENCY WORKSHOP – 4 pdh's**

**Thursday, January 23, 2020 - 7:55 a.m. – 12:00 noon**

Ameren Auditorium, 1901 Chouteau, St. Louis, MO 63103

### **EMERGING ILLINOIS ENERGY TOPICS – 4 pdh's**

**CANCELLED IN SPRING 2020 DUE TO ELECTRICAL EXPO**