



IEC

Spark Better Learning: IEC's Best Practices for Instruction

Ed Brown, Director of Education and Operations, IEC Indy

Kathy Gurba, Training Director, IEC Southern Colorado

Mark Roche, IEC Graduate/1st Year Instructor, IEC
Southern Colorado

Webinar Overview



Overview of IEC Best Practices for Instructors: In-Person Classes, Virtual Classes, Hybrid Classes, and Bilingual Classes



Examples of What These Practices Look Like in the Classroom



Apprentice Impact Story

Best Practices for All Classes



Preparation for Class

- Use the [Instructor Resources Course](#) on the CMS.
- Do the homework and/or quiz for the lesson you will be teaching ahead of time.
- Create lesson plans with timing.
- Give students a printed or digital agenda for the class.
- Arrive early to class and ensure the technology is working properly.
- If using Big Blue Button, make sure to use the recording feature.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Agenda Example

- Class agendas are a helpful tool for instructors to set expectations and requirements for students.
- Class agendas may enable students to be more receptive in class when they know what to expect.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Agenda Example

IEC 1st Year Lesson 112

Class Agenda 10/30/2023

4:30 – Beginning of Class

- Attendance
- Code Quiz
- Review Code Quiz

5:30 – Planned Break

5:45 – Lesson 112

- **112.1 SELECT** between grounding, grounded, and ungrounded conductors.
- **112.2 DESCRIBE** the NEC* requirements for switches.
- **112.3 RECOGNIZE** the construction, operation, and connection of switches.

6:30 – Planned Break

6:45 – Continue Lesson 112

- **112.4 RECOGNIZE** the construction and connection of receptacles by identifying each receptacle and its NEMA designation.
- **112.5 DESCRIBE** the NEC* requirements for receptacles.
- **Safety Lesson 112**

7:30 – Planned Break

7:40 – Hands-on Activity (Switching Activities)

8:30 – Attendance and Close

READING HOMEWORK: Due Monday 11/6/2023

- READ Chapter 6 in EWR Book
- READ Lesson 113 in the Student Manual

WRITTEN HOMEWORK: Due Monday 11/6/2023

- Complete Objective 112.1 Worksheet.
- Complete Objective 112.2 Worksheet.
- Complete Objective 112.3 Worksheet.
- Complete Objective 112.4 Worksheet.
- Complete Objective 112.5 Worksheet.
- Complete Lesson 112 Safety Worksheet.
- Complete Lesson 113 Safety Worksheet.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

IEC 1st Year Lesson 112

Class Agenda 10/30/2023

- 4:30 – Beginning of Class
 - Attendance
 - Code Quiz
 - Review Code Quiz
- 5:30 – Planned Break
- 5:45 – Lesson 112
 - **112.1 SELECT** between grounding, grounded, and ungrounded conductors.
 - **112.2 DESCRIBE** the NEC® requirements for switches.
 - **112.3 RECOGNIZE** the construction, operation, and connection of switches.
- 6:30 – Planned Break



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

IEC 1st Year Lesson 112

Class Agenda 10/30/2023

- 6:45 – Continue Lesson 112
 - **112.4 RECOGNIZE** the construction and connection of receptacles by identifying each receptacle and its NEMA designation.
 - **112.5 DESCRIBE** the NEC[®] requirements for receptacles.
 - **Safety Lesson 112**
- 7:30 – Planned Break
- 7:40 – Hands-on Activity (Switching Activities)
- 8:30 – Attendance and Close



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

IEC 1st Year Lesson 112

Class Agenda 10/30/2023

- **READING HOMEWORK: Due Monday 11/6/2023**
 - READ Chapter 6 in EWR Book
 - READ Lesson 113 in the Student Manual
- **WRITTEN HOMEWORK: Due Monday 11/6/2023**
 - Complete Objective 112.1 Worksheet.
 - Complete Objective 112.2 Worksheet.
 - Complete Objective 112.3 Worksheet.
 - Complete Objective 112.4 Worksheet.
 - Complete Objective 112.5 Worksheet.
 - Complete Lesson 112 Safety Worksheet.
 - Complete Lesson 113 Reading Worksheet.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Instruction

- Go over homework from the previous class first and give code references if applicable.
- Have students participate in working calculations with the instructor for calculations problems discussed in class.
- Prepare some example calculations similar to homework questions with different results.
- Engage with the class.
- Learn the students' names!!!
- Use multiple delivery methods, such as PowerPoint, whiteboard, material demonstrations, and labs.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Introduction Poll



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Instruction

- Use PowerPoint presentations to accentuate, emphasize, and summarize topics.
- If they ask a question that you don't know the answer to, let them know that you will find it later and get back to the class at hand.
 - Remember to follow through with the question.
- Behave, speak, and dress professionally.
- Take safety seriously.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

After Class

- Be available in the classroom for students who want to ask questions or discuss topics in a more 1-on-1 environment.
- Be available after hours for students who want to ask questions.
- Offer limited tutoring to students who are struggling but willing to put in the effort.
- Evaluate your class/lesson.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

After Class

- Report any errors/new errata that are discovered during class.
- Tidy up the classroom/lab before you leave.
- Hold students accountable for deadlines.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Set the Standards High

- A Year 1 Instructor sets the standard for the student for the next four years.
 - Be consistent
 - Adhere to deadlines
 - Set high expectations for yourself and the class



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Best Practices for In-Person Classes



Lesson Planning

- Follow chapter guidelines for lesson planning and class agendas.
- Create lesson plans.
- Stick to lesson plans when class gets interrupted.
- Document what was missed or not completely covered during class to stay within the curriculum schedule.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Classroom Expectations/Rules

- Follow your chapter policies when developing classroom expectations/rules.
- Some examples:
 - Be on time.
 - Bring the required items to class- workbooks, textbooks, paper, pen/pencil, calculator, etc.
 - Homework is due at the preassigned deadline.
 - Encourage the students to ask questions!
 - Complete reading assignments prior to class.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Instruction/Lecture Time

- Address different learning styles by using:
 - Visuals
 - Hands-on Learning
 - Student interaction
- Be aware of generational learning differences:
 - Technology vs Textbooks
 - Lecture vs Interactive
 - Media Video vs Reading
- Gauge student understanding.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Instruction/Lecture Time

- Keep control of the classroom/prevent the class from being hijacked.
- Give breaks regularly to reset the learning environment.
- Have a positive attitude.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Story/Example

- Attitude is everything. Pick a good one!



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Poll

- What's the most important thing you should know?



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Quizzes

- Quizzes are a great resource to gauge the comprehension of material.
- Quizzes should:
 - Cover recent material already covered
 - Be given regularly
 - Include 10-20 questions
- There are a variety of ways to create quizzes – [ATP Test Generator](#), CMS, paper handouts, etc.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Exams

- Exams are a great resource to gauge comprehension of material presented.
- Follow the chapter policies.
- **Standardized Semester and Full Year Final National Exams** are available on the CMS.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Media

- Video/media is an excellent resource for different learning styles.
- Keep the length of videos short (10 minutes or less).
- Videos are supplemental only and should not replace class instruction.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Activities/Challenges to Include

- **Hot Seat Challenges:** Quick interactive competition



IEC

INDEPENDENT ELECTRICAL CONTRACTORS



IEC

**ELECTRICAL APPRENTICESHIP
HOT SEAT CHALLENGE**

Lesson 101 – Basic Electrical Principles

INSTRUCTIONS/ RULES

- **10 Questions from the lesson will be asked.**
- **Be the first one to write the correct answer in the chat and your name will go next to the question asked.**
- **At the end of the 10-question round, the number of the Hot Seat Question will be revealed by the instructor.**
- **If you were the one to answer the Hot Seat question you are the winner.**

Question #1

_____ is like pressure and relates to how hard electricity is being “pushed” through a conductor.

Question #1 Answer

Voltage

Question # 2

 is the intensity or amount of electricity that flows through a conductor.

Question #2 Answer

Amps or Current

Question #3

 is the opposition to current flow and is measured in ohms.

Question #3 Answer

Resistance

The Hot Seat Question:

?

The Hot Seat Question:

Question #1

Activities/Challenges to Include

- **Code of Speed Challenges:** Quick interactive quiz platforms in which students can answer as individuals (anonymously) or create teams:
 - Poll Everywhere
 - Kahoot
 - Big Blue Button (Polling)
 - Edpuzzle.com



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Hands-On Activities

- Demonstrating equipment as an example.
- Give apprentices time to interact with equipment.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Story/Example

- Hands-on drive by



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Best Practices for Online/Hybrid/ Combination Classes



Instruction

- Use the webcam.
- Live instruction should be held on a predetermined day(s) of the week.
- Record the class using the Big Blue Button.
- Weekly discussion forums can be an excellent resource for online participation and engagement.
- Scheduled in-person hands-on activity days are recommended for apprentices to develop and demonstrate their learned skills.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Engagement

- Use the polling feature to verify participation. Time limits on polls may be a good litmus test to gauge student participation and engagement.
- Use the public chat/emojis for continuous check-in throughout the class.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Online/Hybrid Classroom Resources

- Multiple monitors make it much easier to conduct class.
- NFPA Link® is extremely useful and almost a must-have for teaching online.
- Consider having an instructor designated hour for students to ask questions or get help outside of live instruction times.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Combination Classes

- These are classes with some in-person and some virtual students.
- If possible, have an assistant in the class who focuses on monitoring online students.
- Ensure instructors are teaching both in-person and online students with the same level of attention.
- Be aware of when cameras are on and where you are in relation to the camera at all times during class.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Story/Example

- Lessons learned from Covid.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Best Practices for Bilingual Classes



Curriculum

- Know your local requirements for licensing and testing.
- The available Spanish NEC® is behind by approximately 1 code cycle.
- Instructors should have an awareness of the code changes made in the current NEC® edition to better explain the material.
- Bilingual Instructors need to be fluent and confident in their ability to translate current curriculum into the Spanish language because no Spanish version is available.



IEC

INDEPENDENT ELECTRICAL CONTRACTORS

Apprentice Impact Story



Questions

- What made you choose to pursue IEC apprenticeship?
- Think of a time when an instructor truly made you feel like you belonged or were valued. What did they do?
- How have IEC instructors impacted you?
- How are you applying what you've learned in the classroom at a job site?
- Why did you choose to become an IEC instructor?
- Tell us about an impactful moment from your first year as an instructor.
- If you could tell IEC instructors one thing, what would it be?



IEC

INDEPENDENT ELECTRICAL CONTRACTORS



Any questions?