

**CORE CURRICULUM**  
Your Roadmap to Training

NTI 2018 C-Group Presentation

Jim Boyd, PhD  
Assistant Executive Director  
electrical training ALLIANCE

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CORE Curriculum

**YOUR ROADMAP TO TRAINING**

- There are questions your committee must discuss and answer as you identify both your manpower needs and the training your JATC must provide
- How do we plan for the future?
  - Current and Future Work and Job Estimates
  - Apprentice (and future Journeymen) Manpower Needs
  - Changes in Codes, Standards, and Construction/Electrical Systems
  - New Technologies which must be addressed
- What Training does our JATC need to Offer to support work?
  - Current needs
  - Future needs
  - Future Projects and New Technologies

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CORE Curriculum

**EXAMPLE: LIGHTING**

..... another lighting installation at a data center (or any other commercial space)



The luminaires draw both data and a maximum of 30W of electricity from [low-voltage] Ethernet cable that is part of the information network at the 120,000-ft<sup>2</sup> facility. PoE lighting is an example of the Internet of Things (IoT) — by tying LED luminaires into the data center's network, building managers can more intelligently control the lights, turning them on, off, up, down, or changing their color temperature as needed. The PoE system may include wireless IoT\* occupancy or light level sensors that help the software decide how to adjust lighting, and it also collects data to help with building management.

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**CORE Curriculum**

## WHAT DOES THIS HAVE TO DO WITH CORE CURRICULUM?

- IBEW/NECA JATC Training includes three elements:
  - CORE Courses**
    - Required for ALL Inside Apprentices
    - Develop Basic Knowledge and Skills
  - ADVANCED Courses**
    - Required but Selected by the JATC
    - Develop More Advanced CORE and New Knowledge and Skills\*
  - HANDS-ON Training**
    - Delivered Online or in JATC Labs
    - Allows the Learner to Transfer Knowledge/Skills to Applications

\*PoE, IoT, Structured Cabling, and Lighting discussed earlier are all ADVANCED Course topics

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**CORE Curriculum**

## CORE COURSES

**39 CORE Courses**  
**89 CORE Credits**

<b>1st Year Core</b> Orientation, Level I Job Information 1, Level I, Based on the 2017 NEC Conduit Fabrication, Level I - 1st Ed. Job Information 2, Level I, Based on the 2017 NEC (Previously Job Information 3) Code, Symbols, and Practices 1, Level I, Based on the 2017 NEC DC Theory, Level I - 2nd Ed. DC Theory, Level II - 2nd Ed. DC Theory, Level III - 2nd Ed. DC Theory, Level IV - 2nd Ed. Conduit Fabrication, Level II - 1st Ed.	<b>2nd Year Core</b> Orientation, Level II Code and Practices 1, Level I, Based on the 2017 NEC Blueprinting, Level I AC Systems, Level I - 3rd Ed. AC Theory, Level I - 3rd Ed. AC Theory, Level II - 3rd Ed. Electrical Safety-Related Work Practices, Level I, Based on the 2017 NEC Code and Practices 2, Level I, Based on the 2017 NEC Code and Practices 3, Level I, Based on the 2017 NEC Transformers, Level I - 2nd Ed.	<b>3rd Year Core</b> AC Theory, Level II Rigging, Hoisting, Cords and Practices, Level I, Based on the 2017 NEC Electrical Safety-Related Work Practices, Level II, Based on the 2017 NEC Blueprinting for Level I, Level I, Based on the 2017 NEC Code and Practices 4, Level I, Based on the 2014 NEC Orientation, Level III Code Calculations, Level II, Based on the 2014 NEC Motor Control, Level II Torque, Level I Transformers, Level II, Based on the 2014 NEC - 2nd Ed.	<b>5th Year Core</b> Code and Practices 4, Level I, Based on the 2014 NEC Job Information, Level II Job Information, Level III, Based on the 2017 NEC Job Control, Level II Job Control, Level I Job Control, Level I Job Control, Level I, Based on the 2014 NEC
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**CORE Curriculum**

## JATC AND CORE COURSES

- So how a JATC teaches CORE Courses is fixed, correct?
  - Which Courses are identified as CORE Courses is FIXED.
  - When and How a JATC selects to offer those courses in NOT FIXED
- A JATC CAN:
  - Decide the ORDER in which CORE Courses are taught
  - Decide which CORE Courses have ADDITIONAL or HANDS-ON Activities
- A JATC CANNOT:
  - ELIMINATE CORE Courses from their Syllabus
  - Use other courses to REPLACE CORE Courses
    - A JATC can ENHANCE CORE Courses with other material
    - A JATC can tie Craft Certification INCREMENTAL PERFORMANCE EVALUATIONS to a CORE Course

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CORE Curriculum

### Change Order of Courses

### JATC OPTIONS

Orientation L1	Orientation L1
Job Info 1 L1	Job Info 1 L1
Conduit L1	Job Info 1 L2
Job Info 1 L2	Code 1 L1
Code 1 L1	DC Theory L1
DC Theory L1	DC Theory L2
DC Theory L2	DC Theory L3
DC Theory L3	DC Theory L4
DC Theory L4	Conduit L1
Conduit L2	Conduit L2

### Change Year of Courses

Orientation L1	Orientation L2
Job Info 1 L1	Codeology L1
Conduit L1	Conduit L2
Job Info 1 L2	AC Systems L1
Code 1 L1	AC Theory L1
DC Theory L1	AC Theory L2
DC Theory L2	ESRWP L1
DC Theory L3	Code 2 L1
DC Theory L4	Code 2 L2
Blueprints L1	Transformer L1

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CORE Curriculum

## IS ALL CORE THE SAME?

- WAIT, if this is CORE, isn't there only one pathway?
- Remember CORE Courses are those that every apprentice must complete
- Differences in the order of courses may change from JATC to JATC
- Differences in the year courses are offered may change
- Differences will change when different versions of the CLCS are used to plan or track courses
- The starting place for planning your JATCs CORE Courses is the CLCS, and the pathway you choose in the CLCS

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## CLCS – START WITH THE TRAINING MANAGEMENT SYSTEM

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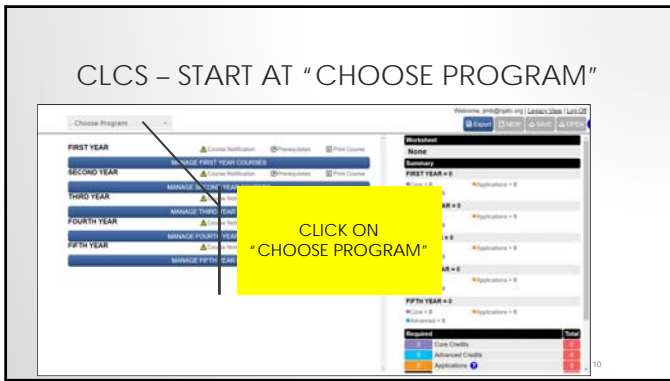
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### CLCS – START AT “CHOOSE PROGRAM”




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### CLCS – INSIDE




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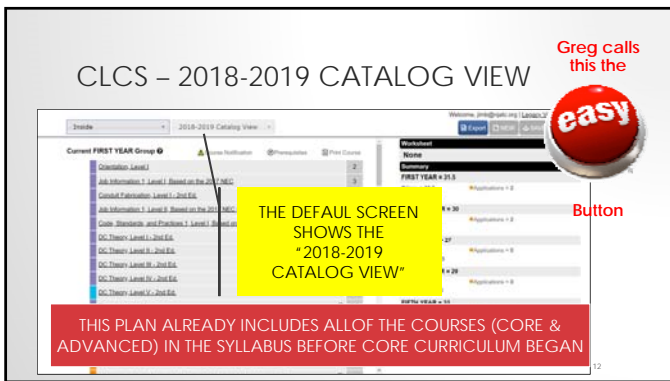
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### CLCS – 2018-2019 CATALOG VIEW



THIS PLAN ALREADY INCLUDES ALLOF THE COURSES (CORE & ADVANCED) IN THE SYLLABUS BEFORE CORE CURRICULUM BEGAN

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### CLCS – CORE COURSE VIEW

SELECT THE "2017-2018 CATALOG VIEW" TO JUST SEE CORE COURSES

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### CLCS – REARRANGE CORE COURSE

REARRANGE COURSES BY DRAGGING EACH COURSE TO MOVE IT

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### CLCS – REARRANGE CORE COURSE

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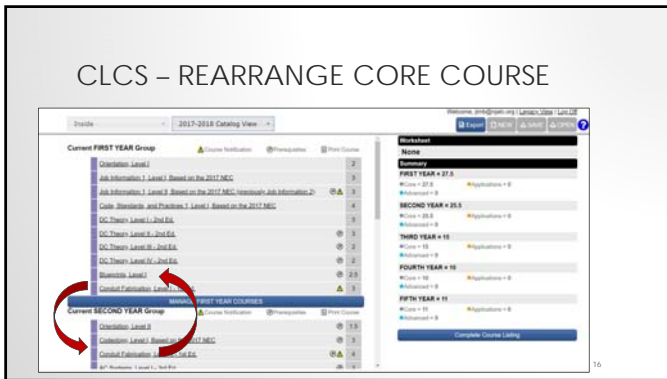
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## CLCS – REARRANGE CORE COURSE




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### CORE Curriculum

## REARRANGE COURSES

- WAIT, if this is CORE, isn't there only one pathway?
- Remember CORE Courses are those that every apprentice must complete
- Differences in the order of courses may change from JATC to JATC
- Differences in the year courses are offered may change
- Differences will change when different versions of the CLCS are used to plan or track courses
- The starting place for planning your JATCs CORE Courses is the CLCS, and the pathway you choose in the CLCS

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### CORE Curriculum

## FOUR-YEAR CORE CURRICULUM?

- The JATC Has Additional Options
  - Standards Define the requirements for our Apprenticeship Programs
    - 900 Hours of Related Training
      - Minimum of 180 Hours Per Year for 5 Years
    - 8,000 Hours of On-the-Job Training
  - Some JATCs have developed a Four-Year Curriculum
    - 225 Hours/Year for 4 Years (Still 900 total Hours)
    - 8,000 Hours of On-the-Job Training
  - The syllabus for such a program can be created in the CLCS

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CORE Curriculum

### FOUR-YEAR CURRICULUM

Summary

FIRST YEAR = 38.5  
 Core = 38.5 Applications = 1  
 Advanced = 0

SECOND YEAR = 38  
 Core = 28 Applications = 1  
 Advanced = 7

THIRD YEAR = 29  
 Core = 19.5 Applications = 0  
 Advanced = 9.5

FOURTH YEAR = 20  
 Core = 9 Applications = 0  
 Advanced = 27

FIFTH YEAR = 0  
 Core = 0 Applications = 0  
 Advanced = 0

Required	Total
Core Credits	107
Advanced Credits	63.5
Applications (Req. 4 in 1st yr., 1 in 2nd yr.)	2
<b>TOTAL</b>	<b>172.5</b>
Bonus	0
<b>Total (including bonus)</b>	<b>172.5</b>
Advisable Credits	134.0
Required Credits	134.0

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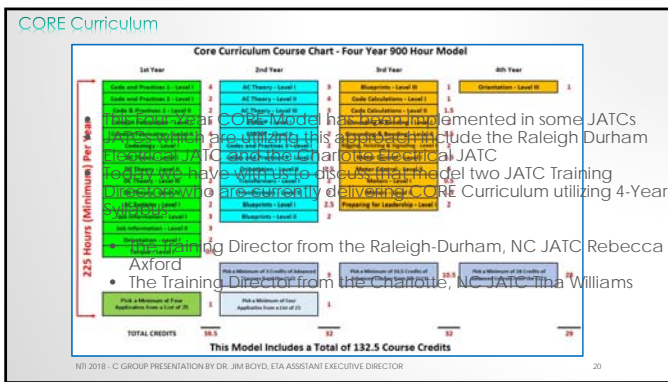
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The CORE Model has been implemented in some JATCs. The units that are currently using this approach include the Raleigh Durham JATC and the Charlotte Electrical JATC. The model two JATC Training are currently delivered. CORE Curriculum utilizing 4-Year Training Director from the Raleigh-Durham, NC JATC Rebecca Axford. The Training Director from the Charlotte, NC JATC Tina Williams.

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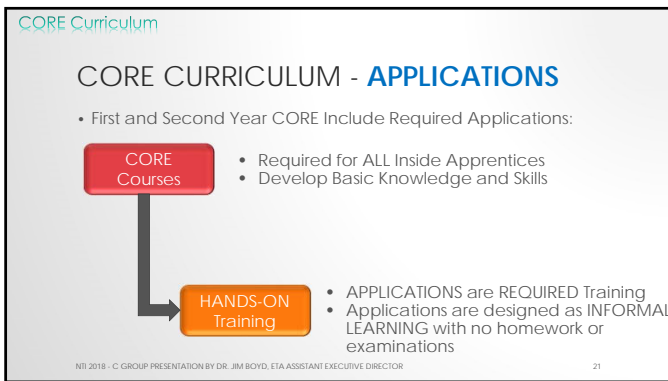
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CORE Curriculum

CORE CURRICULUM - APPLICATIONS  
are **INFORMAL LEARNING (WE CALL IT OJT)**

- **Informal learning** is any learning that is not **formal learning** or **non-formal learning**, such as self-directed learning or learning from experience. Informal learning is organized differently than formal and non-formal learning because it has no set objective in terms of learning outcomes and is never intentional from the learner's standpoint. For all learners this includes heuristic language building, socialization, enculturation, and play. Informal learning is a pervasive ongoing phenomenon of learning via participation or learning via knowledge creation, in contrast with the traditional view of teacher-centered learning via knowledge acquisition.

WIKIPEDIA: [https://en.wikipedia.org/wiki/Informal\\_learning](https://en.wikipedia.org/wiki/Informal_learning)

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CORE Curriculum

CORE CURRICULUM - APPLICATIONS  
All Apprentices Must Complete a MINIMUM of 8 Applications which are selected by the JATC

Applications Manual Lesson 1 - Splicing Conductors	Applications Manual Lesson 14 - Installing a Raceway Support System (Traps)
Applications Manual Lesson 2 - Installing a Double Receptacle	Applications Manual Lesson 15 - Threading Conduit (Tapered Thread)
Applications Manual Lesson 3 - Installing a Single Pole Switch	Applications Manual Lesson 16 - Installing Flexible Metallic Conduit
Applications Manual Lesson 4 - Installing a Switched Double Receptacle	Applications Manual Lesson 17 - Installing Armor Clad and Metal Clad Cables
Applications Manual Lesson 5 - Proper Device Installation Techniques, GFCI Receptacle	Applications Manual Lesson 18 - Installing a Luminaire (Recessed "Can" Fixtures)
Applications Manual Lesson 6 - Using Anchors to Install a Metal Enclosure	Applications Manual Lesson 19 - Installing a Luminaire (2' x 4' Fluorescent)
Applications Manual Lesson 7 - Installing a Retrofit "Old Work" Electrical Box	Applications Manual Lesson 20 - Wire Pulling Techniques
Applications Manual Lesson 8 - Using a Hack Saw	Applications Manual Lesson 21 - Terminating a Category 5e or 6/SA Work Area Outlet
Applications Manual Lesson 9 - Lifting and Capping Conduit	Applications Manual Lesson 22 - Labeling and Marking
Applications Manual Lesson 10 - Erecting an Extension Ladder	Applications Manual Lesson 23 - "Trimming Out" an Electrical Panel
Applications Manual Lesson 11 - Hand Bending a 90° Stub-Up	Applications Manual Lesson 24 - Exothermic Welding of Copper Conductors
Applications Manual Lesson 12 - Hand Bending a Box Offset	Applications Manual Lesson 25 - Connecting a Dual-Voltage, Wye-Wound Motor
Applications Manual Lesson 13 - Cutting a Hole in a Metal Enclosure for an EMT Connector	

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CORE Curriculum

CORE COURSE HANDS ON TRAINING

- Many CORE Courses can/do include available Hands-On Training
- APPLICATIONS are **REQUIRED** Hands-On and may be linked to specific CORE Courses
- Other Hands-On Training may take different forms
  - Online Simulations
  - JATC Lab Exercises and Skill Development
- Hands-On Activities will vary from JATC to JATC, based on:
  - Time
  - Instructor Knowledge, Skill, and Expertise
  - Available JATC Resources

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CORE Curriculum

### CORE COURSE HANDS ON TRAINING

- Hands-On Activities may take the form of:
  - APPLICATIONS from the required Application Manual
  - Online Simulations and Trainers
  - etA Developed Lab Manuals and Lab Exercises
  - JATC/Instructor Developed Lab Exercises
- **NOTE: Craft Certification is NOT Hands-On Training but is an evaluation tool. Craft Fabrication facilities may, however, be used for Hands-On Training**

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CORE Curriculum

### CORE CURRICULUM ADVANCED COURSES

- ADVANCED Courses are additional (non CORE) courses which a JATC selects
  - ADVANCED Courses address targeted training which is necessary for local projects
  - ADVANCED Courses focus on specific technologies, industries, or specialization, such as
    - Instrumentation
    - Programmable Controllers
    - Building Automation
    - Health Care
    - Distributed Generation
    - Other specializations
- ADVANCED Courses may be identified in a Track, such as
  - Industrial
  - Commercial
  - Distributed Generation
  - Health Care
  - Traditional
- JATCs may select any ADVANCED Courses using the CLCS

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CORE Curriculum

### CORE CURRICULUM ADVANCED COURSES

Current THIRD YEAR Group ▲ Course Notification ⊗ Prerequisites 🖨 Print Course

AC Theory Level II featuring the Electrical Theory Simulator - 2nd Ed.	3
Bopping, Hoisting, and Signaling Level I	2
Code and Practice Level I, Based on the 2017 NEC	2
Electrical Safety, Bonding and Work Practices Level II, Based on the 2015 70E	2
Blueprints Level II	2
Grounding and Bonding Level I, Based on the 2017 NEC	2
Preparing for Leadership Personal Qualities Level I	2

MANAGE THIRD YEAR COURSES

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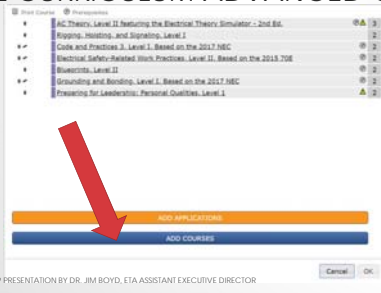
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### CORE CURRICULUM ADVANCED COURSES



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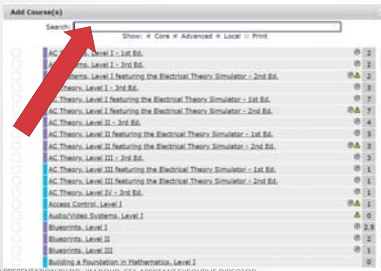
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### CORE CURRICULUM ADVANCED COURSES



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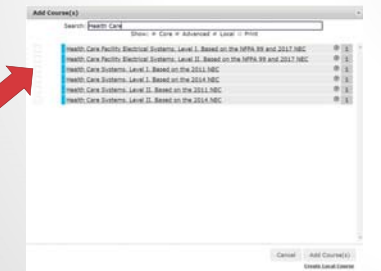
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### CORE CURRICULUM ADVANCED COURSES



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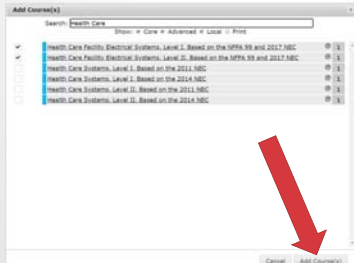
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### CORE CURRICULUM ADVANCED COURSES




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### CORE CURRICULUM ADVANCED COURSES




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### CORE CURRICULUM ADVANCED COURSES

THIRD YEAR

Course Notification Prerequisites Print Course

AC Theory Level II featuring the Electrical Theory Simulator - 2nd Ed.	3
Booping_Hoisting_and Signaling_Level I	2
Code and Practices 3_Level I_Based on the 2017 NEC	2
Electrical Safety-Related Work Practices_Level II_Based on the 2015 70E	2
Blueprints_Level II	2
Grounding and Bonding_Level I_Based on the 2017 NEC	2
Preparing for Leadership: Personal Qualities_Level 1	2
Health Care Facility Electrical Systems_Level I_Based on the NFPA 99 and 2017 NEC	1
Health Care Facility Electrical Systems_Level II_Based on the NFPA 99 and 2017 NEC	1

MANAGE THIRD YEAR COURSES

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CORE Curriculum

### CORE CURRICULUM ADVANCED COURSES

- The electrical training ALLIANCE recommends adding ADVANCED Courses in the 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> Year of training
- JATCs may, however, add ADVANCED Courses in any year of Apprenticeship, providing all prerequisite courses have been completed
- ADVANCED Courses may be specified in the CLCS and added to any year of apprenticeship

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CORE Curriculum

### CORE CURRICULUM ADVANCED COURSES

- JATCs may create Local Courses to use in their curriculum
- Local Courses will appear only in the CLCS for the JATC Which Creates those Courses
- The maximum number of Local Course CREDITS which can be used toward the minimum of 131 Required Credits is 4 Credits
- JATCs may create more than 4 Credits worth of Local Courses, however only 4 of those credits will count toward completion of Apprenticeship

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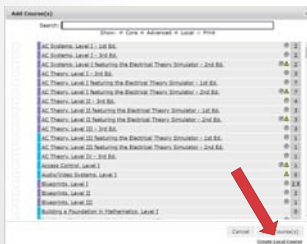
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CORE Curriculum

### CORE CURRICULUM ADVANCED COURSES




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### CORE CURRICULUM ADVANCED COURSES




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### CORE CURRICULUM ADVANCED COURSES




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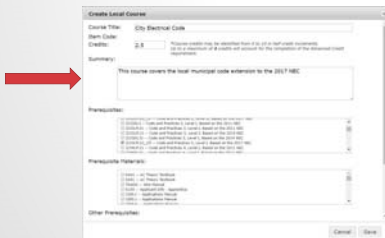
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### CORE CURRICULUM ADVANCED COURSES




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### CORE CURRICULUM ADVANCED COURSES

Course Title: Etc Electrical Code  
 New Code:   
 Credits: 2.5  
 Summary: This course covers the local municipal code extension to the 2017 NEC.  
 Prerequisites: [List of course codes and titles]  
 Prerequisite Reasons: [List of reasons]  
 Other Prerequisites: [List of other prerequisites]

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### CORE CURRICULUM ADVANCED COURSES

Course Title: Etc Electrical Code  
 New Code:   
 Credits: 2.5  
 Summary: This course covers the local municipal code extension to the 2017 NEC.  
 Prerequisites: [List of course codes and titles]  
 Prerequisite Reasons: [List of reasons]  
 Other Prerequisites: [List of other prerequisites]

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### CORE CURRICULUM ADVANCED COURSES

Search: Etc  
 Found: 1 Course(s) Advanced | Local | None  
 Etc Electrical Code

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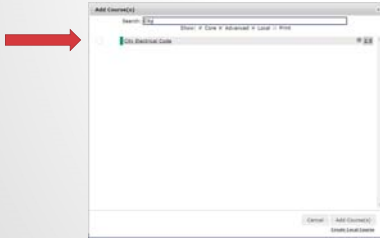
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### CORE CURRICULUM ADVANCED COURSES




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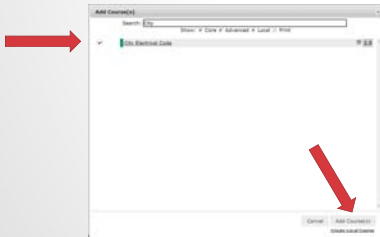
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### CORE CURRICULUM ADVANCED COURSES




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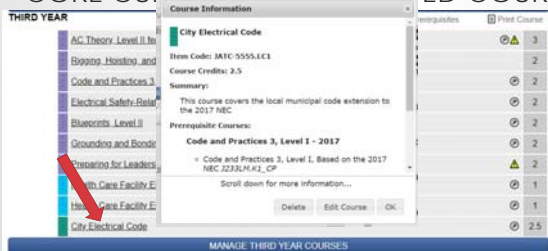
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### CORE CURRICULUM ADVANCED COURSES




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### CORE CURRICULUM ADVANCED COURSES

Summary			
<b>FIRST YEAR = 29</b>			
Core = 29	Applications = 0	Local Advanced = 0	Advanced = 0
<b>SECOND YEAR = 24</b>			
Core = 24	Applications = 0	Local Advanced = 0	Advanced = 0
<b>THIRD YEAR = 19.5</b>			
Core = 15	Applications = 0	Local Advanced = 2.5	Advanced = 2
<b>FOURTH YEAR = 10</b>			
Core = 10	Applications = 0	Local Advanced = 0	Advanced = 0
<b>FIFTH YEAR = 11</b>			
Core = 11	Applications = 0	Local Advanced = 0	Advanced = 0

Complete Course Listing

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### CORE CURRICULUM ADVANCED COURSES

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### CORE CURRICULUM ADVANCED COURSES

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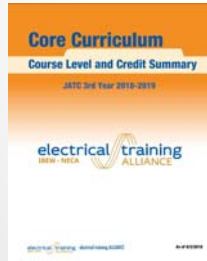
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CORE Curriculum

CORE CURRICULUM ADVANCED COURSES



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CORE Curriculum

CORE CURRICULUM ADVANCED COURSES

Core Curriculum: Course Selection Per Year

1st Year Core	2nd Year Core	3rd Year Core
<ul style="list-style-type: none"> <li>Electrical Safety</li> <li>Hand Tools</li> <li>Wiring Diagrams</li> <li>Control Systems</li> <li>Motor Controls</li> <li>Power Distribution</li> <li>Low Voltage</li> <li>High Voltage</li> <li>Power Quality</li> <li>Energy Efficiency</li> <li>Renewable Energy</li> <li>Smart Grid</li> <li>Cloud Computing</li> <li>Big Data</li> <li>Artificial Intelligence</li> <li>Internet of Things</li> <li>Blockchain</li> <li>Cybersecurity</li> <li>5G Networks</li> <li>Autonomous Vehicles</li> <li>Space Exploration</li> <li>Art and Design</li> <li>Music</li> <li>Dance</li> <li>Theater</li> <li>Visual Arts</li> <li>Writing</li> <li>Public Speaking</li> <li>Leadership</li> <li>Teamwork</li> <li>Communication</li> <li>Problem Solving</li> <li>Critical Thinking</li> <li>Research</li> <li>Analysis</li> <li>Synthesis</li> <li>Evaluation</li> <li>Creation</li> <li>Application</li> <li>Transfer</li> <li>Integration</li> <li>Reflection</li> <li>Revision</li> <li>Collaboration</li> <li>Networking</li> <li>Entrepreneurship</li> <li>Marketing</li> <li>Sales</li> <li>Customer Service</li> <li>Project Management</li> <li>Time Management</li> <li>Stress Management</li> <li>Emotional Intelligence</li> <li>Self-awareness</li> <li>Self-regulation</li> <li>Social skills</li> <li>Relationships</li> <li>Conflict Resolution</li> <li>Decision Making</li> <li>Goal Setting</li> <li>Accountability</li> <li>Resilience</li> <li>Perseverance</li> <li>Optimism</li> <li>Gratitude</li> <li>Kindness</li> <li>Empathy</li> <li>Compassion</li> <li>Service</li> <li>Leadership</li> <li>Teamwork</li> <li>Communication</li> <li>Problem Solving</li> <li>Critical Thinking</li> <li>Research</li> <li>Analysis</li> <li>Synthesis</li> <li>Evaluation</li> <li>Creation</li> <li>Application</li> <li>Transfer</li> <li>Integration</li> <li>Reflection</li> <li>Revision</li> <li>Collaboration</li> <li>Networking</li> <li>Entrepreneurship</li> <li>Marketing</li> <li>Sales</li> 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CORE Curriculum

CORE CURRICULUM ADVANCED COURSES

- How Many ADVANCED Courses Are There?
  - Currently there are more than 175 ADVANCED Courses to choose from
  - These include Inside, Outside, Residential, and Installer Technician Courses
  - Some Courses are Soft Skill Courses like the video course "Press One for Service"
  - Some Courses are personal development such as the Lynda.com Adobe Acrobat Essential Training
- Each JATC or Training Director must decide which ADVANCED Courses are best for offering in their JTC Program
- A minimum of 40 Credits of ADVANCED Courses must be completed by each Inside Apprentice to complete the IBEW/NECA Apprenticeship Program

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CORE Curriculum

SUMMARY

- CORE CURRICULUM provides a process where each JATC can customize their training to meet their own needs
- Tools such as the CLCS make selecting and arranging each JATC's own Syllabus of Courses
- The CLCS allows each JATC to publish their own syllabus in PDF form, or to export that syllabus as a CSV file for importing into other software
- All Inside Apprentices must complete a minimum of
  - 91 Credits of CORE Courses
  - 8 Hands-On APPLICATIONS
  - 40 Credits of ADVANCED Courses

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CORE Curriculum



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QUESTIONS?

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