

July 2, 2015

Mr. John Nielsen, Program Manager, Plumbing  
State of Idaho Division of Building Safety  
1090 East Watertower Street, Suite 150  
Meridian, Idaho 83642

Dear Mr. Nielsen:

Brown Mackie College – Boise is seeking board approval from the Idaho Division of Building Safety for an apprenticeship program in Plumbing. The proposed diploma program in Plumbing is designed to provide graduates with the skills necessary for entry-level positions in the plumbing and gas piping industries. The program provides students with an overview of the plumbing industry, necessary safety protocols, and knowledge-based skills relating to the installation and repair of plumbing systems. Students will also apply problem-solving skills in troubleshooting and repair of plumbing systems.

The proposed program incorporates curriculum developed by The National Center for Construction Education and Research (NCCER) and includes content from all four levels combined in a diploma program that students can complete in one year. At 930 total contact hours, the program exceeds the minimum required classroom hours to meet the state's schooling requirement for licensure.

Enclosed you will find the program description, objectives, curriculum outline, courses descriptions, a syllabus for each course in the program, an equipment list, and information regarding NCCER. Please contact me directly should you need additional materials or if you have any questions.

Thank you,



Christine Knouff  
National Director of Strategic Operations  
Brown Mackie College – Central Services  
625 Eden Park Dr.  
Cincinnati, OH 45202  
513-830-2039  
cknouff@brownmackie.edu

cc:  
Daniel Summer, Interim Campus President

**Diploma: PLUMBING**

The diploma program in Plumbing is designed to provide graduates with the skills necessary for entry-level positions in the plumbing and gas piping industries. The program is designed to provide students with an overview of the plumbing industry, necessary safety protocols, and knowledge-based skills relating to the installation and repair of plumbing systems. Students will also apply problem-solving skills in troubleshooting and repair of plumbing systems. The program incorporates curriculum developed by The National Center for Construction Education (NCCER).

Upon successful completion of the program, graduates should be able to:

- Use industry-standard terminology, tools, equipment, materials, and local code requirements in the installation, servicing, and repair of plumbing systems.
- Work safely in commonly encountered plumbing installation, repair, and maintenance situations.
- Use blueprints and drawings to interpret and verify information, properly request any necessary changes from other professionals on a project, and lay out systems and fixture rough-ins.
- Apply math concepts and make accurate calculations in commonly encountered plumbing situations.
- Employ customer service and project management skills in a variety of situations in the plumbing world.
- Perform as an ethical professional in the plumbing field.

Insert URL here

<b>Concentration</b>		<b>Quarter Credit Hours</b>	<b>58</b>
CON1103	Equipment Safety and Procedures.....		5
PLU1500	Foundations of Plumbing .....		5
PLU1501	Water Distribution and Piping Systems.....		6
PLU1601	Blueprints, Codes, Electrical, and Installations .....		6
PLU1602	Valves, Fixtures, and Water Heaters .....		5
PLU1701	Applied Math, Potable Water Treatment, and Compressed Air .....		6
PLU1702	Maintenance, Service, and the Drain Waste and Vent (DWV) System .....		5
PLU1703	Business Principles and Special Systems .....		5
PLU1801	Codes and Specialized Plumbing Applications .....		5
PLU1802	Customer Service, Project Management, and Advanced Safety.....		6
PLU2900	Externship in Plumbing and Exam Review .....		4
<b>Additional Courses</b>		<b>Quarter Credit Hours</b>	<b>4</b>
PSS1100	Professional Development.....		4
<b>Total quarter credit hours required</b>			<b>62</b>



This course introduces business and accounting practices that are necessary for success as a plumbing contractor. Effective leadership and management skills will also be covered. In addition, students will be introduced to special plumbing systems, such as water recirculation, indirect waste, special waste, and hydronic and solar hot water heating and distribution systems. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

*Prerequisites: PLU1702*

**PLU1801** **Codes and Specialized Plumbing Applications** (6 quarter credit hours)

This course will explore the relationships between local, state, and national plumbing codes, as well as the ways in which codes direct the work of a plumber. Students will be introduced to diagnosis and repair procedures for piping systems, fixtures, and appliances. Plumbing for recreational fixtures, such as pools, spas, and hot tubs, will also be covered. In addition, private well and waste systems, mobile home and park plumbing systems will be introduced. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

*Prerequisites: PLU1703*

**PLU1802** **Customer Service, Project Management, and Advanced Safety** (6 quarter credit hours)

This course covers customer service topics and soft skills that are essential to managing a successful plumbing business. This course also provides coverage of effective project management techniques. Students will have the opportunity to learn the skills necessary to effectively manage multiple projects. In addition, this course will include a review of the OSHA-30 guidelines in preparation for certification in this area. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

*Prerequisites: PLU1702*

**PLU2900** **Externship in Plumbing and Exam Review** (4 quarter credit hours)

Students are assigned to work in a professional environment appropriate for the application of skills learned in the curriculum, thus gaining practical experience in the skills acquired. The externship requires 60 hours.

*Prerequisites: Completion of all course requirements or departmental approval*

**PSS1100** **Professional Development** (4 quarter credit hours)

Development of skills for collegiate success, including techniques for effective use of texts, productive studying and note taking, and success in tests and other assignments. The course also emphasizes professional expectations, communication skills, the use of technology in support of learning, academic policies and issues, time management, problem solving, and effective and ethical use of resources. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

*Prerequisites: None*

NOT TO BE INCLUDED IN CATALOG/ADDENDUM

Course Outline by Quarter  
(individual student schedules may vary)

<b>Term</b>	<b>Course Number</b>	<b>Course Title</b>	<b>Prerequisites</b>
1A	PSS1100	Professional Development	None
1B	CON1103	Equipment Safety and Procedures	PSS1100
1C	PLU1500	Foundations of Plumbing	CON1103
2A	PLU1501	Water Distribution and Piping Systems	PLU1500
2B	PLU1601	Blueprints, Codes, Electrical, and Installations	PLU1501
2C	PLU1602	Valves, Fixtures, and Water Heaters	PLU1601
3A	PLU1701	Applied Math, Potable Water Treatment, and Compressed Air	PLU1602
3B	PLU1702	Maintenance, Service, and the Drain Waste and Vent (DWV) System	PLU1701
3C	PLU1703	Business Principles and Special Systems	PLU1702
4A	PLU1801	Codes and Specialized Plumbing Applications	PLU1703
4B	PLU1802	Customer Service, Project Management, and Advanced Safety	PLU1702
4C	PLU2900	Externship in Plumbing and Exam Review	Completion of all course requirements or departmental approval

## NCCER Curriculum to BMC Plumbing Map

NCCER Curriculum					BMC Curriculum		
Month	Module #	Mod Level	Title		Course Title	Credits Hours	Contact Hours
1			Not Applicable		PSS1100 Professional Development	4	50
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours
2	00101-09	C	Basic Safety	12.5	CON1103 Equipment Safety and Procedures	5	80
		C	Standard First Aid/CPR (For the Workplace Program)	7.5			
	00107-09	C	Basic Communication Skills	7.5			
	00108-09	C	Basic Employability Skills	7.5			
	00102-09	C	Introduction to Construction Math	10			
	00105-09	C	Introduction to Construction Drawings	10			
	00103-09	C	Introduction to Hand Tools	10			
	00104-09	C	Introduction to Power Tools	10			
	00109-09	C	Introduction to Materials Handling	5			
				<b>Course Total Hours:</b>			
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours
3	02101-12	1	Introduction to the Plumbing Profession	4	PLU1500 Foundations of Plumbing	5	80
	02102-12	1	Plumbing Safety	18.5			
	02103-12	1	Tools of the Plumbing Trade	8			
	02104-12	1	Introduction to Plumbing Math	18			
	02105-12	1	Introduction to Plumbing Drawings	21.5			
	02106-12	1	Plastic Pipe and Fittings	10			
				<b>Course Total Hours:</b>			
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours
4	02107-12	1	Copper Pipe and Fittings	16	PLU1501 Water Distribution and Piping Systems	6	80
	02108-12	1	Cast-Iron Pipe and Fittings	10			
	02109-12	1	Carbon Steel Pipe and Fittings	12			
	02110-12	1	Introduction to Plumbing Fixtures	6			
	02111-12	1	Introduction to Drain, Waste, and Vent (DWV) Systems	10			
	02112-12	1	Introduction to Water Distribution Systems	8			
	02201-13	2	Plumbing Math Two	18			
				<b>Course Total Hours:</b>			

Level 1 NCCER Recommend Total per Catalog:					217.5			
Level 1 BMC Hours Assigned:					222			
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours	
5	02202-13	2	Reading Commercial Drawings	18	PLU1601 Blueprints, Codes, Electrical, and Installations	6	80	
	02203-13	2	Structural Penetrations, Insulation, and Fire- Stopping	16				
	02204-13	2	Installing and Testing DWV Piping	24				
	02205-13	2	Installing Roof, Floor, and Area Drains	4				
	02210-13	2	Basic Electricity	18				
Course Total Hours:				80				
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours	
6	02207-13	2	Types of Valves	4	PLU1602 Valves, Fixtures, and Water Heaters	5	80	
	02206-13	2	Installing and Testing Water Supply Piping	20				
	02208-13	2	Installing Fixtures and Valves	20				
	02209-13	2	Installing Water Heaters	16				
	02211-13	2	Fuel Gas and Fuel Oil Systems	20				
Course Total Hours:				80				
Level2 NCCER Recommend Total per Catalog:					170			
Level 2 BMC Hours Assigned:					178			
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours	
7	02301-14	3	Applied Math	18	PLU1701 Applied Math, Potable Water Treatment, and Compressed Air	6	80	
	02312-14	3	Sizing and Protecting the Water Supply System	30				
	02303-14	3	Potable Water Supply Treatment	15				
	02309-14	3	Compressed Air	10				
	02308-14	3	Corrosive-Resistant Waste Piping	7				
Course Total Hours:				80				
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours	

8	02305-14	3	Types of Venting	16	PLU1702 Maintenance, Service, and the Drain Waste and Vent (DWV) System	5	80
	02306-14	3	Sizing DWV and Storm Systems	16			
	02307-14	3	Sewage Pumps and Sump Pumps	10.5			
	02311-14	3	Service Plumbing	37.5			
			<b>Course Total Hours:</b>	<b>80</b>			
			<b>Level 3 NCCER Recommend Total per Catalog:</b>	<b>160</b>			
			<b>Level 3 BMC Hours Assigned:</b>	<b>160</b>			
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours
9	02401-06	4	Business Principles for Plumbers	29	PLU1703 Business Principles and Special Systems	5	80
	02402-06	4	Introductory Skills for the Crew Leader	13			
	02403-06	4	Water Pressure Booster and Recirculation Systems	16			
	02404-06	4	Indirect and Special Waste	10			
	02405-06	4	Hydronic and Solar Heating Systems	12			
			<b>Course Total Hours:</b>	<b>80</b>			
	Month	Module #	Mod Level	Title			
10	02406-06	4	Codes	10	PLU1801 Codes and Specialized Plumbing Applications	6	80
	02407-06	4	Servicing Piping Systems, Fixtures, and Appliances	30			
	02408-06	4	Private Water Supply Well Systems	10			
	02409-06	4	Private Waste Disposal Systems	10			
	02410-06	4	Swimming Pools and Hot Tubs	10			
	02411-06	4	Plumbing for Mobile Homes and Travel Trailer Parks	10			
			<b>Course Total Hours:</b>	<b>80</b>			
			<b>Level 4 NCCER Recommend Total per Catalog:</b>	<b>146</b>			
		<b>Level 4 BMC Hours Assigned:</b>	<b>160</b>				
Month	Module #	Mod Level	Title	BMC Contact Hours	Course Title	Credits Hours	Contact Hours
11			OSHA 30 hour card	30	PLU1802 Customer Service,Project Management, and Advanced Safety	6	80
			Customer Service	24			
			Elements of Project Management	26			
			<b>Course Total Hours:</b>	<b>80</b>			

Month	Module #	Mod Level	Title		Course Title	Credits Hours	Contact Hours
12			Externship	60	PLU2900 Externship in Plumbing and Exam Review	4	80
			Exam preparation	20			
			<b>Course Total Hours:</b>	<b>80</b>			

**Term**  
**Meeting Days/Times**  
**Course Length** 4  
**Room/Location/Mode of Delivery** / /  
**Instructor**  
**Instructor Contact**  
**Instructor Office Hours**

**Academic Leadership**

**Dean**  
**Departmental Chair**  
**Credits** 5  
**Externship/Practicum/Clinical** 0  
**Contact Hours Total** 80    **Contact Hours Lecture** 30    **Contact Hours Lab** 50  
**Prepared Date** 2/5/2015

**DISCLAIMER**  
**TO ACCOMMODATE UNUSUAL CIRCUMSTANCES, THE INSTRUCTOR RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN THE SYLLABUS WHILE THE COURSE IS IN PROGRESS. QUESTIONS ABOUT THE INTERPRETATION OF THE SYLLABUS AND COURSE REQUIREMENTS WILL NORMALLY BE RESOLVED BY THE INSTRUCTOR.**

**I. COURSE DESCRIPTION**

This course introduces the learner to the knowledge and skills essential to successful and safe practice in the construction trades. Students will be introduced to common tools, equipment, and materials used in construction industries, and they will receive instruction on the proper handling of these items in the workplace. The course will include training in First Aid/CPR, and a review of the OSHA-10 guidelines in preparation for certification in these areas. This course will also cover other basic skills for success in the industry, such as effective workplace communications, the characteristics of successful employees, mathematical calculations commonly used in the industry, and the symbols necessary to read construction drawings. This course will include out-of-class work such as reading and writing assignments, practice and practical assignments, and projects.

**Prerequisite:** PSS1100

**II. REQUIRED TEXT MATERIALS**

Contren (2009). Introductory Craft Skills (4th ed.). NCCER. ISBN 9780136086369.

*Additional suggested references/materials list available in the Syllabus Addendum.*  
 \* If the course section requires use of an eText, students must have access to an iPad®. iPad is a registered trade of Apple.

**III. COURSE COMPETENCIES**

Explain the procedures and techniques required to properly handle materials and equipment common to the job site.

Successfully complete first aid and safety training and certification and explain safe work procedures necessary for situations requiring personal protective equipment and involving hazardous chemicals, welding and cutting hazards.

Demonstrate an understanding of the best practices related to OSHA's requirements for the 10-hour Construction Industry training program.

Review basic mathematical functions and demonstrate how they apply to the various construction trades.

Recognize, interpret, and use construction drawings, components and symbols used in the different types of drawings common to the construction trades.

Demonstrate techniques for communicating effectively with coworkers and supervisors both verbally and in written forms, while demonstrating sensitivity to diversity and awareness of the requirements for effective relationship skills.

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**IV. GRADING CRITERIA TABLE**

The criteria for determining a student's grade is as follows (on a percentage of total points basis):

Grade	Percentage Description	Quality Points Breakdown	per Credit Hour
A	Superior achievement	95-100	4
A-		90-94	3.7
B+	Commendable achievement	87-89	3.3
B		83-86	3
B-		80-82	2.7
C+	Satisfactory achievement	76-79	2.3
C		70-75	2
D+	Passing but less than satisfactory achievement	65-69	1.7
D		60-64	1
F	Unacceptable achievement	59 or below	0
I	Incomplete coursework		Computed as F in GPA
W	Withdrawn, without penalty (not applied to Transitional courses)		Not Computed
WF	Withdrawn, with penalty (not applied to Transitional courses)		0
WR	Withdrawn, with penalty (applied to Transitional courses only)		Not Computed
UFR	Unearned F (applied to Transitional courses only)		Not Computed
UF	Unearned F		0
TR	Credit granted through transfer		Not Computed
PR	Credit granted through other sources (PLA/proficiency)		Not Computed
AU	Course audited - no credit awarded		Not Computed
PG	Progress (Transitional studies courses only 70% or higher)		Not Computed
NPG	No Progress (Transitional studies courses only 69% or lower)		Not Computed
CR	Credit granted through test out		Not Computed
TO	Test Out (Transitional studies courses only)		Not Computed
P	Progress (OTA Fieldwork only)		Not Computed
NP	No Progress (OTA Fieldwork only)		Not Computed
IP	In Progress (for Level A Fieldwork OTA only)		Not Computed

**Additional Evaluation Measures for Specific Programs**

Nursing students must pass courses with the prefixes below with a minimum grade of 80%. Failure to obtain a passing score in one or more components (didactic, laboratory and/or clinical) requires that the student repeat the entire course and not just the failed component.

- Nursing (NU, NUR, PN)

- The result for a student who fails the same nursing concentration course two times or has a total of three course failures in any combination of nursing concentration courses, is **Academic/Financial Aid Dismissal**. Appeals for re-entry after dismissal for two unsuccessful attempts in one nursing concentration course or three unsuccessful attempts in any combination of three nursing courses will be denied. An unsuccessful attempt of a course is indicated by a grade of F, W, WF, or UF.

Students enrolled in the courses with the following prefix must pass each course designated with a minimum grade of 70%.

- **ALH/BI – Allied Health**
- **ANH/VT – Veterinary Technology**
- **HSC - Health Sciences**
- **MD – Surgical Technology**
- **ME – Medical Education**
- **OT/OTA – Occupational Therapy**
- **PH/PHR – Pharmacy**
- **PT/PTA – Physical Therapy**

Students in transitional courses must pass with a 70% or higher. A student who fails the same transitional studies course after three attempts, is **Academic/Financial Aid Dismissal**. Appeals for re-entry after dismissal for three unsuccessful attempts in a transitional course will be denied. An unsuccessful attempt of a course is indicated by a grade of NPG, WR, or UFR.

The grade of Failure (F) does compute in the GPA and CGPA and does count as credit attempted. The grades of Progress (P) and No Progress (NP) are included in the Incremental Completion Rate and the Maximum Time Frame. The grade of In Progress (IP) is not included in the Incremental Completion Rate or the Maximum Time Frame.

Students receive grades at the end of each course. The grade report contains both the Grade Point Average for the quarter (GPA) and Cumulative Grade Point Average (CGPA) for the program. When a course is repeated after failure, only the most attempt will count in the GPA/CGPA, though the failing grade will still appear on the transcript. All attempts are included in the credit hours attempted.

A quarter contact hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:

(A) One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for four weeks.

(B) Where lab work is required at least an equivalent amount of work as required in paragraph (A) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, and other academic work leading to the award of credit.

## **V. INSTRUCTIONAL METHODS**

Instructional methods may consist of, but are not limited to, lectures, PowerPoint and other computer presentations, audio and video presentations, off site tours quizzes and exams. Some sections may include blended learning techniques.

**VI. EVALUATION MECHANISMS – Formative and Summative**

Evaluation of student work shall consist of both formative and summative assessment including but not limited to the following:

<b>Formative Measures Student Learning</b>	<b>Summative Meeting Course Competencies</b>
<ul style="list-style-type: none"> <li>• Assignments/Activities/Tasks</li> <li>• Group work</li> <li>• In-class Activities</li> <li>• Library research project</li> <li>• Homework (out-of-class activities)</li> <li>• Quizzes</li> </ul>	<ul style="list-style-type: none"> <li>• Final Exam</li> <li>• Mid-term Exam</li> <li>• Project</li> </ul>

**Total Points: 1,000**

To determine your final % grade in the class, take your total number of points and divide by 10.  
You can then refer to the grading system outlined in Section IV for your corresponding letter grade.

**NOTE: In all evaluations, the grade may be reduced, regardless of the quality of work, if work is submitted late, incomplete or insufficient.** The College's make-up policy is as follows: make-up of any missed assignment is at the discretion of the instructor. It is the student's responsibility to maintain contact with the instructor when absences occur. The instructor reserves the right to require documentation for absences.

**VII. TOPICAL COURSE OUTLINE**

- Basic safety for construction
- Standard first aid for certification
- OSHA 10 safety training
- Basic communication skills for the workplace
- Employability skills/soft skills
- Review of basic math for the construction trades
- Blueprint reading
- Materials handling









## **Disability Services**

Brown Mackie College - provides accommodations to qualified students with disabilities. The Disability Services office assists qualified students with disabilities in acquiring reasonable and appropriate accommodations and in supporting equal access to services, programs and activities at Brown Mackie College - .

Students who seek reasonable accommodations should notify the Disability Services Coordinator of their specific limitations and, if known, their specific requested accommodations. Students will be asked to supply medical documentation of the need for accommodation. Classroom accommodations are not retroactive, but are effective only upon the student sharing approved accommodations with the instructor. Therefore, students are encouraged to request accommodations as early as feasible with the Disability Services Coordinator to allow for time to gather necessary documentation. If you have a concern or complaint in this regard, please contact the Disability Services Coordinator at your school. Complaints will be handled in accordance with the school's Internal Grievance Procedure for Complaints of Discrimination and Harassment.

## **NON-DISCRIMINATION POLICY STATEMENT**

Brown Mackie College - does not discriminate or harass on the basis of race, color, national origin, sex, gender, sexual orientation, gender identity or expression, disability, age, religion, veteran's status, genetic marker, or any other characteristic protected by state, local or federal law, in our programs and activities. Brown Mackie College - will not retaliate against persons bringing forward allegations of harassment or discrimination. The Dean of Academic Affairs has been designated to handle inquiries and coordinate the institution's compliance efforts regarding the non-discrimination policy.

**IX. STUDENT ACKNOWLEDGMENT OF RECEIPT**

Print your name: \_\_\_\_\_

Signature: \_\_\_\_\_

Today's date: \_\_\_\_\_

This form will be kept on file by the Department Chair of the Department offering this course for one year. Please print all information. At the beginning of each term, please update your student information on the student portal.

Name	
Address	
Phone Number	
Alternate Number/Cell/Text	
E-mail Address	

**Term**  
**Meeting Days/Times**  
**Course Length** 4  
**Room/Location/Mode of Delivery** / /  
**Instructor**  
**Instructor Contact**  
**Instructor Office Hours**

**Academic Leadership**

**Dean**  
**Departmental Chair**  
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**I. COURSE DESCRIPTION**

This course provides an introduction to the plumbing profession, to include basic principles, a brief history, and possible career choices. Students are introduced to plumbing math, construction drawings, commonly used tools, and plastic pipe and fittings. In addition, this course addresses the best practices for some of the most common and hazardous job site situations. These safety principles and procedures will be emphasized throughout the rest of the program. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** CON1103

**II. REQUIRED TEXT MATERIALS**

Woodson, R. (). Plumber's and Pipe Fitter's Calculation Manual ( ed.). McGraw-Hill. ISBN 0071448683.
NCCER (). Plumbing Level I ( ed.). Pearson. ISBN 0-13-292143-X.
OSHA (2015). OSHA 10 Pamphlets ( ed.). OSHA. ISBN .

*Additional suggested references/materials list available in the Syllabus Addendum.*  
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### **III. COURSE COMPETENCIES**

Describe basic principles that guide plumbing installation, maintenance, and repair techniques, and identify and explain how to safely use and care for the various tools and equipment available to the modern plumber.

Identify career paths available in the plumbing trade.

Identify and explain how to respond to hazardous situations and unsafe conditions that may be encountered on plumbing job-sites.

Apply math skills commonly used by plumbers in the field to calculate such things as pipe measurements and end-to-end dimensions by figuring fitting allowances and thread makeup.

Identify the types of drawings commonly used in the plumbing trade, explain the relationships among these drawings, and read, interpret, and sketch various types of drawings.

Identify and explain the various types of plastic piping used in plumbing applications, and specify the appropriate types of plastic pipe, fittings, valves, hangers, and supports for given plumbing situations.

Accurately plan, measure, cut and join plastic pipe for a variety of plumbing situations.

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- **PH/PHR – Pharmacy**
- **PT/PTA – Physical Therapy**

Students in transitional courses must pass with a 70% or higher. A student who fails the same transitional studies course after three attempts, is **Academic/Financial Aid Dismissal**. Appeals for re-entry after dismissal for three unsuccessful attempts in a transitional course will be denied. An unsuccessful attempt of a course is indicated by a grade of NPG, WR, or UFR.

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(A) One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for four weeks.

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## **V. INSTRUCTIONAL METHODS**

Instructional methods may consist of, but are not limited to, lectures, PowerPoint and other computer presentations, audio and video presentations, off site tours quizzes and exams. Some sections may include blended learning techniques.

**VI. EVALUATION MECHANISMS – Formative and Summative**

Evaluation of student work shall consist of both formative and summative assessment including but not limited to the following:

<b>Formative Measures Student Learning</b>	<b>Summative Meeting Course Competencies</b>
<ul style="list-style-type: none"> <li>• Assignments/Activities/Tasks</li> <li>• Group work</li> <li>• In-class Activities</li> <li>• Library research project</li> <li>• Homework (out-of-class activities)</li> <li>• Quizzes</li> </ul>	<ul style="list-style-type: none"> <li>• Final Exam</li> <li>• Mid-term Exam</li> <li>• Project</li> </ul>

**Total Points:**

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You can then refer to the grading system outlined in Section IV for your corresponding letter grade.

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**VII. TOPICAL COURSE OUTLINE**

- History of plumbing and the evolution of modern plumbing
- Tools of the trade: safe use, maintenance, and storage
- Plumbing safety
- Safety planning for projects of all sizes
- Review of basic math concepts and formulas
- Construction and plumbing specific math
- Reading, understanding, and utilizing blueprints & other mechanical drawings
- Rendering mechanical drawings
- Non-metallic pipe and fittings









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**IX. STUDENT ACKNOWLEDGMENT OF RECEIPT**

Print your name: \_\_\_\_\_

Signature: \_\_\_\_\_

Today's date: \_\_\_\_\_

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Name	
Address	
Phone Number	
Alternate Number/Cell/Text	
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**Term**  
**Meeting Days/Times**  
**Course Length** 4  
**Room/Location/Mode of Delivery** / /  
**Instructor**  
**Instructor Contact**  
**Instructor Office Hours**  
**Academic Leadership**  
**Dean**  
**Departmental Chair**  
**Credits** 6  
**Externship/Practicum/Clinical** 0  
**Contact Hours Total** 80    **Contact Hours Lecture** 50    **Contact Hours Lab** 30  
**Prepared Date** 2/5/2015

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**I. COURSE DESCRIPTION**

This course introduces basic water distribution and waste disposal systems. In addition, plumbing fixtures and the proper use of copper, carbon steel, and cast iron pipe will be covered. Students will have the opportunity to apply math skills while learning and practicing common installation techniques. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** PLU1500

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**II. REQUIRED TEXT MATERIALS**

NCCER (). Plumbing Level I ( ed.). Pearson. ISBN 0-13-292143-X.
NCCER (). Plumbing Level 2 ( ed.). Pearson. ISBN 0-13-3145805.

*Additional suggested references/materials list available in the Syllabus Addendum.*  
\* If the course section requires use of an eText, students must have access to an iPad®. iPad is a registered trade of Apple.

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### **III. COURSE COMPETENCIES**

Identify the various types of metal piping, as well as the fittings and valves used with each type, and explain the proper techniques for hanging and supporting each type.

Properly size, layout, cut, solder, bend, join, groove, test, and install various types of metal piping.

Identify various types of plumbing fixtures, explain their uses, select appropriate fixtures for a given plumbing situation, and perform a safe installation.

Discuss the factors that influence drain, waste, and vent (DWV) system design; describe how different types of drains, fittings, vents, and pipe are used to move waste out of a building; and sketch an isometric drawing of a DWV system,

Identify types of traps and explain their uses, as well as how they function.

Describe the components and functions of a water distribution system, explain the relationships among the components, and sketch an isometric drawing of a water distribution system, labeling its components.

Apply math formulas and perform accurate calculations in a variety of commonly encountered plumbing situations.

**IV. GRADING CRITERIA TABLE**

The criteria for determining a student's grade is as follows (on a percentage of total points basis):

Grade	Percentage Description	Quality Points Breakdown	per Credit Hour
A	Superior achievement	95-100	4
A-		90-94	3.7
B+	Commendable achievement	87-89	3.3
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C+	Satisfactory achievement	76-79	2.3
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F	Unacceptable achievement	59 or below	0
I	Incomplete coursework		Computed as F in GPA
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WF	Withdrawn, with penalty (not applied to Transitional courses)		0
WR	Withdrawn, with penalty (applied to Transitional courses only)		Not Computed
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PG	Progress (Transitional studies courses only 70% or higher)		Not Computed
NPG	No Progress (Transitional studies courses only 69% or lower)		Not Computed
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- Nursing (NU, NUR, PN)

- The result for a student who fails the same nursing concentration course two times or has a total of three course failures in any combination of nursing concentration courses, is **Academic/Financial Aid Dismissal**. Appeals for re-entry after dismissal for two unsuccessful attempts in one nursing concentration course or three unsuccessful attempts in any combination of three nursing courses will be denied. An unsuccessful attempt of a course is indicated by a grade of F, W, WF, or UF.

Students enrolled in the courses with the following prefix must pass each course designated with a minimum grade of 70%.

- **ALH/BI – Allied Health**
- **ANH/VT – Veterinary Technology**
- **HSC - Health Sciences**
- **MD – Surgical Technology**
- **ME – Medical Education**
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**VII. TOPICAL COURSE OUTLINE**

- Copper Piping Systems
- Steel Piping Systems
- Cast Iron Piping Systems
- Plumbing Fixtures
- DWV Systems
- Water Distribution Systems
- Plumbing Math 2









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Today's date: \_\_\_\_\_

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Alternate Number/Cell/Text	
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**Term**  
**Meeting Days/Times**  
**Course Length** 4  
**Room/Location/Mode of Delivery** / /  
**Instructor**  
**Instructor Contact**  
**Instructor Office Hours**

**Academic Leadership**

**Dean**  
**Departmental Chair**  
**Credits** 6  
**Externship/Practicum/Clinical** 0  
**Contact Hours Total** 80    **Contact Hours Lecture** 40    **Contact Hours Lab** 40  
**Prepared Date** 2/5/2015

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**I. COURSE DESCRIPTION**

This course introduces Mechanical, Electrical, and Plumbing (MEP) civil and architectural drawings. Students will have the opportunity to learn how to read and interpret these drawings. Master installation of Drain, Waste, and Vent (DWV) and roof drain systems is also covered, as well as structural penetrations, insulation, and fire stopping. In addition, this course will introduce electricity and plumbing related electrical applications. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** PLU1501

**II. REQUIRED TEXT MATERIALS**

NCCER (). Plumbing Level 2 ( ed.). Pearson. ISBN 0-13-3145805.
Wiggins, G. (). A Manual of Construction Documentation ( ed.). Watson-Guptill. ISBN 978-0823030026.

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### **III. COURSE COMPETENCIES**

Identify and interpret architectural blueprints and schematics, using the information to ensure accurate dimensions; generate requests for information (RFIs); locate plumbing entry points; and establish piping routes and fixture locations.

Explain how to address structural penetrations and pipe support in commonly encountered plumbing scenarios, and identify proper locations for cutting, boring, and sleeving structural members based on applicable codes.

Install various types of insulating materials.

Describe the proper techniques for installing common types of fire stopping materials in penetrations through fire-rated structural members, walls, floors, and ceilings.

Design, construct and test an entire DWV system.

Locate, install, and connect various types of roof, floor, and area drains as well as drain related components, such as waterproof membranes, flashing, shower pans, and trap primers, according to code.

**IV. GRADING CRITERIA TABLE**

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**VII. TOPICAL COURSE OUTLINE**

- MEP blueprint interpretation.
- Schematic drawings
- Calculations and estimating
- Structural penetrations, insulation, and fire stopping
- DWV design
- DWV layout and installation
- Roof, floor, and area drain systems
- Electricity and plumbing









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**I. COURSE DESCRIPTION**

This course introduces servicing and installation of common valves, fixtures, and various types of water heaters. Pressure testing procedures are also practiced. In addition, students will have the opportunity to learn how to complete a comprehensive material take-off (MTO) list for a range of project types, from simple to complex. This course also covers fuel gas systems. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** PLU1601

**II. REQUIRED TEXT MATERIALS**

NCCER (). Plumbing Level 2 ( ed.). Pearson. ISBN 0-13-3145805.
Lindsey, F. (). Pipe Fitters Handbook ( ed.). NY Industrial Press. ISBN 0831130199.

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### **III. COURSE COMPETENCIES**

Identify valve types by use and pressure limits; recommend appropriate valve types for given applications; and dismantle, service, and repair common valves.

Develop a water supply piping MTO list using information from given construction drawings, and correctly size and install a water service line, including a backflow preventer, based on those drawings.

Install a water supply system and pressure test to code.

Locate a water meter using applicable code and a complete set of construction drawings.

Properly install industry standard valves and fixtures in a variety of commonly encountered plumbing situations, verifying that project specifications are met and dimensions are correct.

Identify the functions and components of various types of water heaters, recommend an appropriate type of water heater for a given situation, and safely install various types of water heaters.

Safely connect appliances to fuel gas systems, and size, test, and purge a fuel gas system according to code.

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Students enrolled in the courses with the following prefix must pass each course designated with a minimum grade of 70%.

- **ALH/BI – Allied Health**
- **ANH/VT – Veterinary Technology**
- **HSC - Health Sciences**
- **MD – Surgical Technology**
- **ME – Medical Education**
- **OT/OTA – Occupational Therapy**
- **PH/PHR – Pharmacy**
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Students in transitional courses must pass with a 70% or higher. A student who fails the same transitional studies course after three attempts, is **Academic/Financial Aid Dismissal**. Appeals for re-entry after dismissal for three unsuccessful attempts in a transitional course will be denied. An unsuccessful attempt of a course is indicated by a grade of NPG, WR, or UFR.

The grade of Failure (F) does compute in the GPA and CGPA and does count as credit attempted. The grades of Progress (P) and No Progress (NP) are included in the Incremental Completion Rate and the Maximum Time Frame. The grade of In Progress (IP) is not included in the Incremental Completion Rate or the Maximum Time Frame.

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(A) One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for four weeks.

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## **V. INSTRUCTIONAL METHODS**

Instructional methods may consist of, but are not limited to, lectures, PowerPoint and other computer presentations, audio and video presentations, off site tours quizzes and exams. Some sections may include blended learning techniques.

**VI. EVALUATION MECHANISMS – Formative and Summative**

Evaluation of student work shall consist of both formative and summative assessment including but not limited to the following:

<b>Formative Measures Student Learning</b>	<b>Summative Meeting Course Competencies</b>
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**Total Points:**

To determine your final % grade in the class, take your total number of points and divide by 10.  
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**VII. TOPICAL COURSE OUTLINE**

Valves: identification, installation, servicing, and repair  
 Installing and testing water supply piping  
 Fixtures: identification, installation, and maintenance  
 Water heaters  
 Fuel gas piping systems









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**IX. STUDENT ACKNOWLEDGMENT OF RECEIPT**

Print your name: \_\_\_\_\_

Signature: \_\_\_\_\_

Today's date: \_\_\_\_\_

This form will be kept on file by the Department Chair of the Department offering this course for one year. Please print all information. At the beginning of each term, please update your student information on the student portal.

Name	
Address	
Phone Number	
Alternate Number/Cell/Text	
E-mail Address	

**Term**  
**Meeting Days/Times**  
**Course Length** 4  
**Room/Location/Mode of Delivery** / /  
**Instructor**  
**Instructor Contact**  
**Instructor Office Hours**

**Academic Leadership**

**Dean**  
**Departmental Chair**  
**Credits** 6  
**Externship/Practicum/Clinical** 0  
**Contact Hours Total** 80    **Contact Hours Lecture** 40    **Contact Hours Lab** 40  
**Prepared Date** 2/5/2015

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**I. COURSE DESCRIPTION**

This course covers pipe sizing according to volume and pressure requirements, as well as working with valve controls and corrosive waste. In addition, the topics of compressed air systems and potable water treatment will be covered. Students will have the opportunity to apply math skills in performing common field calculations. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** PLU1602

**II. REQUIRED TEXT MATERIALS**

NCCER (). Plumbing Level 3 ( ed.). Pearson. ISBN 0-13-404242.
Kardon, R., Hansen, D. & Morrissey, P. (). An Illustrated Guide to the Plumbing and Mechanical Codes (4th ed.). Code Check Plumbing & Mechanical ISBN 1600853390
Hamilton, J. & Hamilton M. (). Math to Build On: A Book for Those Who Build ( ed.). . ISBN 0962419710.

*Additional suggested references/materials list available in the Syllabus Addendum.*  
 \* If the course section requires use of an eText, students must have access to an iPad®. iPad is a registered trade of Apple.

### **III. COURSE COMPETENCIES**

Make accurate field calculations for sizing, protecting, and designing water supply systems.

Properly estimate areas, volumes, and material requirements for water distribution systems; determine system requirements by calculating demands and losses; and correctly size piping based on volume and pressure constraints.

Identify corrosive waste, and specify and install the proper piping for corrosive waste pipe systems.

Identify and explain potable water treatment procedures and equipment.

Specify and install water filtration and softening systems.

Troubleshoot and disinfect contaminated water supply systems.

Identify and explain types, functions and capacities of compressed air systems; identify methods of conditioning compressed air; and safely install and operate high pressure systems.

**IV. GRADING CRITERIA TABLE**

The criteria for determining a student's grade is as follows (on a percentage of total points basis):

Grade	Percentage Description	Quality Points Breakdown	per Credit Hour
A	Superior achievement	95-100	4
A-		90-94	3.7
B+	Commendable achievement	87-89	3.3
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I	Incomplete coursework		Computed as F in GPA
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WF	Withdrawn, with penalty (not applied to Transitional courses)		0
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PR	Credit granted through other sources (PLA/proficiency)		Not Computed
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**Additional Evaluation Measures for Specific Programs**

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**VII. TOPICAL COURSE OUTLINE**

- Applied plumbing math
- Specifying, sizing, and protecting water supply systems
- Corrosive waste piping
- Potable water-filtration, softening and contaminants
- Compressed air distribution systems









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Name	
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Alternate Number/Cell/Text	
E-mail Address	

**Term**  
**Meeting Days/Times**  
**Course Length** 4  
**Room/Location/Mode of Delivery** / /  
**Instructor**  
**Instructor Contact**  
**Instructor Office Hours**  
**Academic Leadership**  
**Dean**  
**Departmental Chair**  
**Credits** 5  
**Externship/Practicum/Clinical** 0  
**Contact Hours Total** 80    **Contact Hours Lecture** 30    **Contact Hours Lab** 50  
**Prepared Date** 2/5/2015

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**I. COURSE DESCRIPTION**

This course introduces sewage and waste water systems, and the components required for proper operation. Large frame pumps, valves, and connections will be discussed. Proper sizing, venting, and applicable codes will also be covered. Additionally, students will have the opportunity to learn about service plumbing, to include troubleshooting, maintenance, and repair of common system components. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** PLU1701

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**II. REQUIRED TEXT MATERIALS**

NCCER (). Plumbing Level 3 ( ed.). Pearson. ISBN 0-13-404242.
Hemp, P. (). Installing & Repairing Plumbing Fixtures ( ed.). Taunton Press. ISBN 978-1561580750.

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### **III. COURSE COMPETENCIES**

Safely perform installation and maintenance procedures on venting systems.

Calculate drainage fixture units and properly size drainage systems.

Identify, troubleshoot, and repair pump malfunctions.

Install a sump pump.

Properly diagnose and repair problems in various plumbing systems using proper troubleshooting techniques, tools, and instruments.

Write service orders that effectively communicate troubleshooting results and service needs.

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**VII. TOPICAL COURSE OUTLINE**

- Venting
- DWV and storm water disposal
- Large frame pumps, valves and joinery components
- Troubleshooting techniques and procedures
- Plumbing system service









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**Term**  
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**Room/Location/Mode of Delivery** / /  
**Instructor**  
**Instructor Contact**  
**Instructor Office Hours**

**Academic Leadership**

**Dean**  
**Departmental Chair**  
**Credits** 5  
**Externship/Practicum/Clinical** 0  
**Contact Hours Total** 80      **Contact Hours Lecture** 30      **Contact Hours Lab** 50  
**Prepared Date** 6/24/2015

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**I. COURSE DESCRIPTION**

This course introduces business and accounting practices that are necessary for success as a plumbing contractor. Effective leadership and management skills will also be covered. In addition, students will be introduced to special plumbing systems, such as water recirculation, indirect waste, special waste, and hydronic and solar hot water heating and distribution systems. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** PLU1702

**II. REQUIRED TEXT MATERIALS**

Woodson, R. D. (). Plumbing Contractor: Start and Run a Money-Making Business ( ed.). : Tab Books. ISBN 0830643230.
NCCER (). Plumbing Level 4 ( ed.). Upper Saddle River, NJ: Pearson. ISBN 0-13-3824225.

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### **III. COURSE COMPETENCIES**

Analyze information on a balance sheet and a profit-and-loss statement, and interpret the meaning of this information for a given plumbing business.

Discuss business activities that can affect profit and loss, and recommend effective cost control measures for a given scenario.

Recommend effective techniques for managing personnel in the field, and demonstrate effective leadership skills in a variety of situations.

Design and install water pressure booster and recirculation systems according to local code requirements.

Properly diagnose and repair problems in pressure booster and water recirculation systems using proper troubleshooting techniques and tools.

Safely install indirect and special waste systems according to local code requirements.

Describe the basic types of hydronic and solar water heating, storage, and distribution systems, explain the relationships between their components, and lay out, build, and test a hydronic or solar heating system.

**IV. GRADING CRITERIA TABLE**

The criteria for determining a student's grade is as follows (on a percentage of total points basis):

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\*Earned F Grade: students who met the course requirements by completing the final assignment in the course. Final assignment includes a final exam, final project, final paper, portfolio presentation, or capstone project. If a student completed the final assignment of the course, but did not pass the course, the F grade will be considered earned. The course's instructor will award this grade when appropriate.

\*\*Unearned F Grade: students who failed the course AND did not complete the final assignment in the course. Final assignment includes, but is not limited to a final exam, final project, final paper, portfolio presentation, capstone project or any other assignment due in the last week of the course. If a student completed some or all of the other requirements in the course but did not complete the final assignment of the course and failed the course, the F grade will be considered unearned. An unearned F grade will be reflected as a "UF" grade on the transcript. The course's instructor will award this grade when appropriate.

### **Additional Evaluation Measures for Specific Programs**

Nursing students must pass courses with the prefixes below with a minimum grade of 80%. Failure to obtain a passing score in one or more components (didactic, laboratory and/or clinical) requires that the student repeat the entire course and not just the failed component.

- Nursing (NU, NUR, PN)
- SSE0090 (Exploration of Professional Nursing Practice)

• The result for a student who fails the same nursing concentration course two times or has a total of three course failures in any combination of nursing concentration courses, is **Academic/Financial Aid Dismissal**. Appeals for re-entry after dismissal for two unsuccessful attempts in one nursing concentration course or three unsuccessful attempts in any combination of three nursing courses will be denied. An unsuccessful attempt of a course is indicated by a grade of F, W, WF, or UF.

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- (B) Where lab work is required at least an equivalent amount of work as required in paragraph (A) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, and other academic work leading to the award of credit.

## **V. INSTRUCTIONAL METHODS**

Instructional methods may consist of, but are not limited to, lectures, PowerPoint and other computer presentations, audio and video presentations, off site tours quizzes and exams. Some sections may include blended learning techniques.

**VI. EVALUATION MECHANISMS – Formative and Summative**

Evaluation of student work shall consist of both formative and summative assessment including but not limited to the following:

<b>Formative Measures Student Learning</b>	<b>Summative Meeting Course Competencies</b>
<ul style="list-style-type: none"> <li>Assignments/Activities/Tasks</li> <li>• Group work</li> <li>• In-class Activities</li> <li>• Library research project</li> <li>• Homework (out-of-class activities)</li> <li>• Quizzes</li> </ul>	<ul style="list-style-type: none"> <li>• Final Exam</li> <li>• Mid-term Exam</li> <li>• Project</li> </ul>

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**VII. TOPICAL COURSE OUTLINE**

- Basic business accounting
- Basic leadership and people management skills
- Science and operation of water pressure booster systems
- Water recirculation systems
- Indirect waste systems
- Special waste systems
- Hydronic systems
- Solar hot water heating and distribution systems

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**IX. STUDENT ACKNOWLEDGMENT OF RECEIPT**

Print your name: \_\_\_\_\_

Signature: \_\_\_\_\_

Today's date: \_\_\_\_\_

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Name	
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**Term**  
**Meeting Days/Times**  
**Course Length** 4  
**Room/Location/Mode of Delivery** / /  
**Instructor**  
**Instructor Contact**  
**Instructor Office Hours**

**Academic Leadership**

**Dean**  
**Departmental Chair**  
**Credits** 6  
**Externship/Practicum/Clinical** 0  
**Contact Hours Total** 80      **Contact Hours Lecture** 40      **Contact Hours Lab** 40  
**Prepared Date** 6/24/2015

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**I. COURSE DESCRIPTION**

This course will explore the relationships between local, state, and national plumbing codes, as well as the ways in which codes direct the work of a plumber. Students will be introduced to diagnosis and repair procedures for piping systems, fixtures, and appliances. Plumbing for recreational fixtures, such as pools, spas, and hot tubs, will also be covered. In addition, private well and waste systems, mobile home and park plumbing systems will be introduced. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** PLU1703

**II. REQUIRED TEXT MATERIALS**

Kardon, R. Hansen, D. & Morrissey, P. (). An Illustrated Guide to the Plumbing and Mechanical Codes (4th ed.). : Code Check Plumbing & Mechanical. ISBN 1600853390.
NCCER (). Plumbing Level 4 ( ed.). Upper Saddle River, NJ: Pearson. ISBN 0-13-3824225.

*Additional suggested references/materials list available in the Syllabus Addendum.*  
 \* If the course section requires use of an eText, students must have access to an iPad®. iPad is a registered trade of Apple.

### **III. COURSE COMPETENCIES**

Interpret plumbing codes and identify applicable code requirements in a variety of commonly encountered plumbing situations.

Troubleshoot and repair water supply problems, water heater problems, and DWV problems.

Explain how to properly locate, drill, size, construct, and clean private well systems.

Explain the operation, assembly, disassembly, and repair of pumps and well components.

Explain the proper procedures for locating, installing, cleaning, and servicing private waste disposal systems.

Explain the proper procedures for installing, maintaining, and repairing plumbing systems for recreational fixtures, such as swimming pools, hot tubs, and spas.

Explain the proper procedures for installing, maintaining, and repairing plumbing systems for mobile homes and trailer parks, and design a system to address the plumbing needs of a given trailer park.

**IV. GRADING CRITERIA TABLE**

The criteria for determining a student's grade is as follows (on a percentage of total points basis):

Grade	Percentage Description	Quality Points Breakdown	per Credit Hour
A	Superior achievement	95-100	4
A-		90-94	3.7
B+	Commendable achievement	87-89	3.3
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B-		80-82	2.7
C+	Satisfactory achievement	76-79	2.3
C		70-75	2
D+	Passing but less than satisfactory achievement	65-69	1.7
D		60-64	1
F*	Unacceptable achievement	59 or below	0
I	Incomplete coursework		Computed as F in GPA
W	Withdrawn, without penalty (not applied to Transitional courses)		Not Computed
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## **V. INSTRUCTIONAL METHODS**

Instructional methods may consist of, but are not limited to, lectures, PowerPoint and other computer presentations, audio and video presentations, off site tours quizzes and exams. Some sections may include blended learning techniques.

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**NOTE: In all evaluations, the grade may be reduced, regardless of the quality of work, if work is submitted late, incomplete or insufficient.** The College's make-up policy is as follows: make-up of any missed assignment is at the discretion of the instructor. It is the student's responsibility to maintain contact with the instructor when absences occur. The instructor reserves the right to require documentation for absences.

**VII. TOPICAL COURSE OUTLINE**

- Codes and how they regulate the plumbing field
- Code interpretation and application
- Servicing piping systems, fixtures, and appliances
- Private wells and pumps
- Septic waste disposal systems
- Swimming pools, hot tubs and spas
- Mobile home and mobile home park plumbing systems

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Name	
Address	
Phone Number	
Alternate Number/Cell/Text	
E-mail Address	

**Term**

**Meeting Days/Times**

**Course Length** 4

**Room/Location/Mode of Delivery** / /

**Instructor**

**Instructor Contact**

**Instructor Office Hours**

**Academic Leadership**

**Dean**

**Departmental Chair**

**Credits** 6

**Externship/Practicum/Clinical** 0

**Contact Hours Total** 80      **Contact Hours Lecture** 50      **Contact Hours Lab** 30

**Prepared Date** 2/5/2015

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**I. COURSE DESCRIPTION**

This course covers customer service topics and soft skills that are essential to managing a successful plumbing business. This course also provides coverage of effective project management techniques. Students will have the opportunity to learn the skills necessary to effectively manage multiple projects. In addition, this course will include a review of the OSHA-30 guidelines in preparation for certification in this area. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** PLU1702

**II. REQUIRED TEXT MATERIALS**

Chatfield, C. & Johnson, T. (). Microsoft Project 2010 Step by Step ( ed.). Microsoft Press. ISBN 978-0735626959.
Cosica, S. (). HVAC Customer Service Handbook (College Curriculum and Classroom Materials) <a href="http://www.coscia.com/soft-skills-package-dvd.php">http://www.coscia.com/soft-skills-package-dvd.php</a> ( ed ). ISBN
OSHA (). OSHA Training materials and handouts available at: <a href="https://www.osha.gov/dte/outreach/teachingaids.html">https://www.osha.gov/dte/outreach/teachingaids.html</a> , <a href="https://www.osha.gov/dte/outreach/construction/focus_four/index.html">https://www.osha.gov/dte/outreach/construction/focus_four/index.html</a> <a href="https://www.osha.gov/dte/outreach/construction/focus_four/index.html">https://www.osha.gov/dte/outreach/construction/focus_four/index.html</a>

*Additional suggested references/materials list available in the Syllabus Addendum.*  
 \* If the course section requires use of an eText, students must have access to an iPad®. iPad is a registered trade of Apple.

### **III. COURSE COMPETENCIES**

Demonstrate proper etiquette and effective communication skills in a variety of customer service scenarios.

Use customer service and soft skills to communicate effectively and meet the needs of all project stakeholders, to include external customers, in-house personnel, vendors, and inspectors.

Plan a project from start to finish, incorporating labor and material requirements.

Recognize and explain the impact that a particular change may have on other aspects of a given project.

Develop a project plan that includes contingencies for change, and adjust an existing plan to accommodate unexpected changes.

Plan several simple projects and group them together as one larger project with multiple outcomes, vendors, and labor requirements.

Demonstrate an understanding of the best practices related to OSHA's requirements for the 30-hour Construction Industry training program.

**IV. GRADING CRITERIA TABLE**

The criteria for determining a student’s grade is as follows (on a percentage of total points basis):

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**VII. TOPICAL COURSE OUTLINE**

- Professionalism and communication skills
- Customer service skills
- Basic project management
- Managing change
- Building a complex project management plan
- Managing multiple projects and sharing resources
- OSHA 30 safety training









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**Course Length** 4

**Room/Location/Mode of Delivery** / /

**Instructor**

**Instructor Contact**

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**Academic Leadership**

**Dean**

**Departmental Chair**

**Credits** 4

**Externship/Practicum/Clinical** 60

**Contact Hours Total** 80      **Contact Hours Lecture** 20      **Contact Hours Lab** 0

**Prepared Date** 6/25/2015

**DISCLAIMER**

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**I. COURSE DESCRIPTION**

Students are assigned to work in a professional environment appropriate for the application of skills learned in the curriculum, thus gaining practical experience in the skills acquired. The externship requires 60 hours.

**Prerequisite** Completion of all course requirements or departmental approval

**II. REQUIRED TEXT MATERIALS**

NONE (NONE). NONE (NONE ed.). NONE: NONE. ISBN NONE.

**III. COURSE COMPETENCIES**

- Apply concepts learned throughout the program in a job environment.
- Recognize the similarities and differences regarding classroom concepts as they relate to practical application.
- Expand knowledge related to the industry.
- Explore possible career opportunities within the field of study.
- Create a bridge between program completion and career placement.
- Identify areas where continued education or professional development may be necessary to enhance knowledge and skills.
- Demonstrate the ability to pass practice exams focused on specified subject areas.

**IV. INSTRUCTIONAL METHODS.**

Instructional methods may include, but are not limited to, student observation and participation in activities designed to apply skills learned in the curriculum under direct supervision of the externship site supervisor.

**V. EVALUATION MECHANISMS – Formative and Summative**

Evaluation of student work shall consist of both formative and summative assessment including but not limited to the following:

<b>Formative Measures Student Learning</b>	<b>Summative Meeting Course Competencies</b>
Daily journal entries	
Midterm site evaluation	
Final site evaluation	
Weekly attendance sheet submission	<b>Total Points:</b>

To determine your final % grade in the class, take your total number of points and divide by 10. You can then refer to the grading system outlined in Section V for your corresponding letter grade.

**NOTE: In all evaluations, the grade may be reduced, regardless of the quality of work, if work is submitted late, incomplete or insufficient.** The College’s make-up policy is as follows: make-up of any missed assignment is at the discretion of the instructor. It is the student’s responsibility to maintain contact with the instructor when absences occur. The instructor reserves the right to require documentation for absences.

**IV. GRADING CRITERIA TABLE**

The criteria for determining a student's grade is as follows (on a percentage of total points basis):

Grade	Percentage Description	Quality Points Breakdown	per Credit Hour
A	Superior achievement	95-100	4
A-		90-94	3.7
B+	Commendable achievement	87-89	3.3
B		83-86	3
B-		80-82	2.7
C+	Satisfactory achievement	76-79	2.3
C		70-75	2
D+	Passing but less than satisfactory achievement	65-69	1.7
D		60-64	1
F*	Unacceptable achievement	59 or below	0
I	Incomplete coursework		Computed as F in GPA
W	Withdrawn, without penalty (not applied to Transitional courses)		Not Computed
WF	Withdrawn, with penalty (not applied to Transitional courses)		0
WR	Withdrawn, with penalty (applied to Transitional courses only)		Not Computed
UFR**	Unearned F (applied to Transitional courses only)		Not Computed
UF**	Unearned F		0
TR	Credit granted through transfer		Not Computed
PR	Credit granted through other sources (PLA/proficiency)		Not Computed
AU	Course audited - no credit awarded		Not Computed
PG	Progress (Transitional studies courses only 70% or higher)		Not Computed
NPG	No Progress (Transitional studies courses only 69% or lower)		Not Computed
CR	Credit granted through test out		Not Computed
TO	Test Out (Transitional studies courses only)		Not Computed
P	Progress (OTA Fieldwork only)		Not Computed
NP	No Progress (OTA Fieldwork only)		Not Computed
IP	In Progress (for Level A Fieldwork OTA only)		Not Computed

\*Earned F Grade: students who met the course requirements by completing the final assignment in the course. Final assignment includes a final exam, final project, final paper, portfolio presentation, or capstone project. If a student completed the final assignment of the course, but did not pass the course, the F grade will be considered earned. The course's instructor will award this grade when appropriate.

\*\*Unearned F Grade: students who failed the course AND did not complete the final assignment in the course. Final assignment includes, but is not limited to a final exam, final project, final paper, portfolio presentation, capstone project or any other assignment due in the last week of the course. If a student completed some or all of the other requirements in the course but did not complete the final assignment of the course and failed the course, the F grade will be considered unearned. An unearned F grade will be reflected as a "UF" grade on the transcript. The course's instructor will award this grade when appropriate.

**Additional Evaluation Measures for Specific Programs**

Nursing students must pass courses with the prefixes below with a minimum grade of 80%. Failure to obtain a passing score in one or more components (didactic, laboratory and/or clinical) requires that the student repeat the entire course and not just the failed component.

- Nursing (NU, NUR, PN)
- SSE0090 (Exploration of Professional Nursing Practice)

• The result for a student who fails the same nursing concentration course two times or has a total of three course failures in any combination of nursing concentration courses, is **Academic/Financial Aid Dismissal**. Appeals for re-entry after dismissal for two unsuccessful attempts in one nursing concentration course or three unsuccessful attempts in any combination of three nursing courses will be denied. An unsuccessful attempt of a course is indicated by a grade of F, W, WF, or UF.

Students enrolled in the courses with the following prefix must pass each course designated with a minimum grade of 70%.

- **ALH/BI – Allied Health**
- **ANH/VT – Veterinary Technology**
- **HSC - Health Sciences**
- **MD – Surgical Technology**
- **ME – Medical Education**
- **OT/OTA – Occupational Therapy**
- **PH/PHR – Pharmacy**
- **PT/PTA – Physical Therapy**

Students in transitional courses must pass with a 70% or higher. A student who fails the same transitional studies course after three attempts, is **Academic/Financial Aid Dismissal**. Appeals for re-entry after dismissal for three unsuccessful attempts in a transitional course will be denied. An unsuccessful attempt of a course is indicated by a grade of NPG, WR, or UFR.

The grade of Failure (F) does compute in the GPA and CGPA and does count as credit attempted. The grades of Progress (P) and No Progress (NP) are included in the Incremental Completion Rate and the Maximum Time Frame. The grade of In Progress (IP) is not included in the Incremental Completion Rate or the Maximum Time Frame.

Students receive grades at the end of each course. The grade report contains both the Grade Point Average for the quarter (GPA) and Cumulative Grade Point Average (CGPA) for the program. When a course is repeated after failure, only the most attempt will count in the GPA/CGPA, though the failing grade will still appear on the transcript. All attempts are included in the credit hours attempted.

Any grade that affects the cumulative grade point average (CGPA), the incremental completion rate (ICR) or the maximum allowable timeframe (MTF) is considered to be punitive.

A quarter contact hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:

(A) One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for four weeks.

(B) Where lab work is required at least an equivalent amount of work as required in paragraph (A) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, and other academic work leading to the award of credit.

Student agrees to strictly adhere to the externship requirement over the four-week term. Students must turn in daily journals, completed projects and assignments to the learning management system (LMS). Weekly attendance sheets should be submitted at the scheduled weekly meeting on campus.

Externship students will receive a packet of weekly attendance sheets from the externship instructor at the beginning of the term. Students should fill-in the time in, time out, and total hours for each day at the externship site. The student will provide the completed time sheet to the instructor during the scheduled weekly meeting on campus.

Students are expected to strictly adhere to the externship schedule arranged with the externship site. Failure to do so may result in removal from the externship site. The site supervisory may dismiss the student from the site for failure to attend as scheduled. Tardiness and failure to remain until scheduled department time at the site may also result in dismissal from the site.

Students will complete a daily journal entry in the learning management system (LMS) recording their activities at the externship site each day, including general observations, questions and concerns. The daily journal will be at least one-half page to one full page of double-spaced type text per day. The journal entries must be shared with the instructor to receive credit for completing the assignment.

The primary evaluative tool for student achievement in the externship experience is the site representative evaluation of student performance. The site evaluation of student performance will be provided to the site representative by the externship instructor, and the completed evaluation will be submitted by the site representative directly to the instructor twice during the term, at midterm and final.

Student must demonstrate an understanding of course material by actively participating in all aspects of the course. Students will be evaluated and graded using, but not limited, to the following criteria:

- Utilizing professional terminology in externship site setting.
- Accurately relating course material to "real world" situations, utilizing text and other reference materials and personal experience where applicable.
- Thoroughly and accurately completing assignments, papers, projects, quizzes, group projects, exams, etc. All work should exhibit professional quality and must be received by the set deadline. Late work may not be accepted without mitigating circumstances.

## **VII. TOPICAL COURSE OUTLINE**

### **Main Topics**

Apply concepts learned in job environment.  
Practical application.  
Analyze new trends and technology.  
Relate knowledge to the industry.  
Career opportunities.  
Continued education or professional development.  
Bridge program completion and career placement.  
Work process.

### **Disability Services**

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Students who seek reasonable accommodations should notify the Disability Services Coordinator of their specific limitations and, if known, their specific requested accommodations. Students will be asked to supply medical documentation of the need for accommodation. Classroom accommodations are not retroactive, but are effective only upon the student sharing approved accommodations with the instructor. Therefore, students are encouraged to request accommodations as early as feasible with the Disability Services Coordinator to allow for time to gather necessary documentation. If you have a concern or complaint in this regard, please contact the Disability Services Coordinator at your school. Complaints will be handled in accordance with the school's Internal Grievance Procedure for Complaints of Discrimination and Harassment.

### **NON-DISCRIMINATION POLICY STATEMENT**

Brown Mackie College - does not discriminate or harass on the basis of race, color, national origin, sex, gender, sexual orientation, gender identity or expression, disability, age, religion, veteran's status, genetic marker, or any other characteristic protected by state, local or federal law, in our programs and activities. Brown Mackie College - will not retaliate against persons bringing forward allegations of harassment or discrimination. The Dean of Academic Affairs has been designated to handle inquiries and coordinate the institution's compliance efforts regarding the non-discrimination policy.

**VII. STUDENT ACKNOWLEDGMENT OF RECEIPT**

Print your name: \_\_\_\_\_

Signature: \_\_\_\_\_

Today's date: \_\_\_\_\_

This form will be kept on file by the Department Chair of the Department offering this course for one year. Please print all information. At the beginning of each term, please update your student information on the student portal.

Name	
Address	
Phone Number	
Alternate Number/Cell/Text	
E-mail Address	

**Term**

**Meeting Days/Times**

**Course Length** 4

**Room/Location/Mode of Delivery** / /

**Instructor**

**Instructor Contact**

**Instructor Office Hours**

**Academic Leadership**

**Dean**

**Departmental Chair**

**Credits** 4

**Externship/Practicum/Clinical**

**Contact Hours Total** 50      **Contact Hours Lecture** 30      **Contact Hours Lab** 20

**Prepared Date** 2/5/2015

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**I. COURSE DESCRIPTION**

Development of skills for collegiate success, including techniques for effective use of texts, productive studying and note taking, and success in tests and other assignments. The course also emphasizes professional expectations, communication skills, the use of technology in support of learning, academic policies and issues, time management, problem solving, and effective and ethical use of resources. This course will include out-of-class work such as reading and writing assignments, practice and practical application assignments, and projects.

**Prerequisite** None (None)

**II. REQUIRED TEXT MATERIALS**

Cuseo, J. B, Thompson, A., Campagna, M. & Fecas, Viki S. (2013). Thriving in college and beyond (3rd ed.). Kendall Hunt. ISBN 978-1-4652-1074-6.


*Additional suggested references/materials list available in the Syllabus Addendum.*

\* If the course section requires use of an eText, students must have access to an iPad®. iPad is a registered trade of Apple.

### **III. COURSE COMPETENCIES**

Clarify personal goals for success in one's program and in one's life.

Explain how he/she is responsible for his/her experience in college and ways to make it a successful and satisfying experience.

List and describe specific study skill methods to: improve the ability to recall information; prepare for and take examinations; take efficient notes; listen for comprehension; and recognize stress and control it with relaxation.

Identify the resources available in the college and the individuals who can help with problems.

Explain the different procedures for planning and managing time and for focusing attention on the task at hand when reading, listening, typing, taking notes, or taking tests.

Demonstrate familiarity with common computer applications, and use these in coursework.

Utilize tutorial support services to bolster technology and learning needs.

Demonstrate familiarity with the college library and its resources.

Access and use the student portal to find course schedule, term grades, electronic library resources, and online platform.

Use the features of a Web browser, search engines, and an email application.

Develop a plan for education and career goal success.

Participate in self-reflective assessment activities which will be carried through the program.

Communicate one's learning to others.

Utilize laboratory time to conduct research on career choice, explore learning resources, practice using technology to enhance learning, and complete course assignments, identifying needs for tutorials and additional support for academic

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(B) Where lab work is required at least an equivalent amount of work as required in paragraph (A) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, and other academic work leading to the award of credit.

## **V. INSTRUCTIONAL METHODS**

Instructional methods may consist of, but are not limited to, lectures, PowerPoint and other computer presentations, audio and video presentations, off site tours quizzes and exams. Some sections may include blended learning techniques.

**VI. EVALUATION MECHANISMS – Formative and Summative**

Evaluation of student work shall consist of both formative and summative assessment including but not limited to the following:

<b>Formative Measures Student Learning</b>	<b>Summative Meeting Course Competencies</b>
<ul style="list-style-type: none"> <li>• Assignments/Activities/Tasks</li> <li>• Group work</li> <li>• In-class Activities</li> <li>• Library research project</li> <li>• Homework (out-of-class activities)</li> <li>• Quizzes</li> </ul>	<ul style="list-style-type: none"> <li>• Final Exam</li> <li>• Mid-term Exam</li> <li>• Project</li> </ul>

**Total Points: 1,000**

To determine your final % grade in the class, take your total number of points and divide by 10.  
You can then refer to the grading system outlined in Section IV for your corresponding letter grade.

**NOTE: In all evaluations, the grade may be reduced, regardless of the quality of work, if work is submitted late, incomplete or insufficient.** The College's make-up policy is as follows: make-up of any missed assignment is at the discretion of the instructor. It is the student's responsibility to maintain contact with the instructor when absences occur. The instructor reserves the right to require documentation for absences.

**VII. TOPICAL COURSE OUTLINE**

Dream Plan to Graduation  
 Time management  
 Introduction to college level writing  
 Personal finance  
 Reading, test taking and study skills  
 Diversity  
 Introduction to information resources – library, digital  
 Oral presentation skills  
 Basic computer skills  
 Introduction to student portal and electronic classroom environment

Learning styles and Bloom's taxonomy









## **Disability Services**

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Students who seek reasonable accommodations should notify the Disability Services Coordinator of their specific limitations and, if known, their specific requested accommodations. Students will be asked to supply medical documentation of the need for accommodation. Classroom accommodations are not retroactive, but are effective only upon the student sharing approved accommodations with the instructor. Therefore, students are encouraged to request accommodations as early as feasible with the Disability Services Coordinator to allow for time to gather necessary documentation. If you have a concern or complaint in this regard, please contact the Disability Services Coordinator at your school. Complaints will be handled in accordance with the school's Internal Grievance Procedure for Complaints of Discrimination and Harassment.

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**IX. STUDENT ACKNOWLEDGMENT OF RECEIPT**

Print your name: \_\_\_\_\_

Signature: \_\_\_\_\_

Today's date: \_\_\_\_\_

This form will be kept on file by the Department Chair of the Department offering this course for one year. Please print all information. At the beginning of each term, please update your student information on the student portal.

Name	
Address	
Phone Number	
Alternate Number/Cell/Text	
E-mail Address	

**Plumbing Program  
Tool, Equipment, & Materials List**

**Plumbing Safety Equipment**

<b>Item</b>	<b>Description</b>	<b># Required</b>
Gloves	Rubber	15
	Cloth, work	15
Body Harness	Fall protection	2
Hard Hat	Personal Protection	15
Safety Glasses	Non Prescription	15
	Prescription	1
Safety Shoes	OSHA approved	1
Hearing Protection	Disposable	500
	Quality long lasting	1
Breathing Mask	N-100	15
	OSHA Resperator	1
Eyewash Station		1
Comprehensive First Aid Kit		1
Fire Extinguisher		4
Lock Out- Tag Out kit	Plumbing & electric	4
Ladders	4', 6', 8' & 10' step	1 ea
	16' extension	1
Scaffolding	2 bucks with wheels	1 set
	walk boards	2
	toe kicks	1 set
Coveralls/ Uniform	Daily class attire	2

**Shop Tools**

<b>Item</b>	<b>Description</b>	<b># Required</b>
Air Compressor	School owned	1
Demolition Saw	School owned	1
	Electric	1
Hammer Drill	Corded	1
Right Angle Drill	Corded	2
Drill/ Screw gun	Battery	15
Drill Bit Set	1/16" thru 1/2"	15
Twist Drill bit set	1/4" thru 1"	2
Spade Bit set	1/4" thru 1"	15
Hole Hawg Bit set	1" thru 4"	2
Hole saw Bit set	3/4" thru 4"	2
Reciprocating saw	Corded	1
	Battery	1
Circular Saw	Blades- 4",6",9" sets	25 ea
	7 1/4" Corded	1
	Blades-plywood	4
	crosscut	4
	demo/rip	4

**Plumbing Program  
Tool, Equipment, & Materials List**

Saber/Jig saw	Corded	1
Extension Chords	12 gage 3 way	5
Pipe Threader System	Electric	1
Pipe benders	tubing-spring bender	15
	1/2" to 3/4"	5
Grinder	Corded	1
	Cutting Disc	20
	grinding wheel	5
	shield	3
Work lights	Halogen	2
	Corded work light	5
Flashlights	small LED	1
	Batteries	1 set extra
Crow Bar	16", 24", 36"	1 ea
Cast Iron snap cutter	Shop owned	1
Steel Pipe Cutter	Shop owned	1
Pipe wrench(monkey)	Set 10" thru 24"	1 ea
Pipe extractors	Set	1 ea
Reatcheting pipe threading kit		1 ea
Flairing tool		1 ea
Pipr reamer	set 1/2 thru 3"	1 ea
Internal pipe cutter	small pipe	1 ea
	large pipe	1 ea
Turbo torch	Tank refills	15
Flux & brush		15
Oxy/Acetelene torch	B tanks	1
Silver solder	roll	15
Faucet tools	Handle puller	3
	Seat refinsher	1
	Seat extractor	1
Sewer Auger		1
Closet auger		1 ea
Medium Auger/ K 50		1 ea
Drill type/hand spinner		1 ea
Pipe freezer		1 ea
Pipe thawer		1 ea
Pipe stand and vice		1 ea
Inspection camera		1 ea

**Individual Student Tool Box**

Multi-function calaulator	1
Propane torch & tank	1
Silver Plumber Solder	1 small roll

**Plumbing Program**  
**Tool, Equipment, & Materials List**

1/2, 3/4 combo pipe cleaner tool		1
Flux & brush		1
1/2" & 3/4" pipe cutter		1
Teflon Plumbers tape	standard	1
	gas pipe	1
Abrasive Cloth		1 roll
Plumbers Puddy		1 container
PVC primer & bonding agent		1 ea
Hacksaw	small	1
	standard	1
Wrenches		
	Adjustable 8"& 12"	1 ea
	Strap Wrench	1
	Vice Grips 6" nose	1
	Vice Grips 10" straight	1 t
	Pipe Wrench 10"& 14"	1 ea
	5/16" Torque wrench	1
Screw Drivers	Full set- slotted* Phillips	1 ea
Socket Sets		
	1/4", 3/8" & 1/2" drive-	1 set ea.
Hammers	16 oz. rip & 16 oz. ball Pein-	1 ea
Striking tools	Full set cold chisels-	1 ea
	Wood chisels 1/4" thru 1"-	1ea
	Center, Pin Starting Punches-	1ea
Pliers		
	Long reach needle nose-	1
	12" Ergo Torque & groove-	1
	8" slip joint Pliers	
	jaw Pliers 5", 7" & 10"-	1 ea
	Side cutters	1
	Tin snips- right & Left	1 ea
	16" Hand Saw	1
	Offset Hex wrench	1
	Basin Wrench/telosopic-	1
Miscellaneous Tools		
	Large tool box	
	Midget tubing cutter-	1
	Flairing tool 1/16" thru 5/8"-	1
	12" magnetic Torpedo level-	1
	2' magnetic level	1
	Retractable utility knife-	1
	Utility Knife Blades- 1-5pack	
	Led small and large flash lights-	1
	Keyhole saw	1

**Plumbing Program  
Tool, Equipment, & Materials List**

	25' Tape measure	1
	Set- Allen keys- metric & Standard	
	Set- round & flat metal files- 1	
	Medium copper pipe cutter- 1	
	Pex crimper- 1/2" thru 1"- 1 ea	
	Plastic tube cutters-sissor type-1	
	PQ wrench	1
	Plunger- sink & toilet 1 ea	
Supplies		
	Roll- teflon tape- water	
	Sm tube pipe dope	
	Sm tube lock tite	
	Sm Tube lithium grease	
	Caulking Gun 10 oz.	
	Box of disposable rags	
	Sm. Roll gasket material	
	Sanding cloth- sm roll	
PPE	Personal Protection Equipment	
	2 lb. sledge hammer	
	12" combination square	
	sm. Speed square	

**Pipe & Tubing Inventory**

Drain Waste Vent	4" Cast Iron Pipe	60'
	3" Cast Iron	60'
	3" Stainless steel	15'
	3" Terracotta	3'
	4" orange Pipe	4'
	6" Ducatel Iron	10'
	4" ABS	20'
	3" ABS	60'
	4" PVC DMV	60'
	3" PVC DWV	100'
	2" PVC DWV	150"
	1.5" PVC DWV	150"
	1.25 PVC DWV	100'
	1" PVC supply	150'
Water Supply Pipe		
	1' polyvinyl flex pipe100'	
	1" copper	20'
	3/4" copper	100'
	1/2" copper	300'
	1/4" copper tubing	1-roll

**Plumbing Program  
Tool, Equipment, & Materials List**

1" Pex	100'
3/4" pex	300'
1/2" Pex	300'
3/4" CPVC	260'
1/2" CPVC	320'

**Fittings**

	<b>Copper</b>	<b>CPVC</b>	<b>Iron</b>
Coupling	1/2 ,3/4	1/2 ,3/4	6"
T	100 ea.	100 ea.	
4 Way	25 ea	25 ea.	
TY			
90 elbow	100 ea.	100 ea.	
45 Elbow	100 ea.	100 ea.	
22.5 Elbow	25 ea.	25 ea.	
Street 90	25 ea.	25 ea.	
Street 45	15 ea	15 ea,	
Reducers 4"- 3", 3 - 2"			
Water Supply Pipe	150' ea	150' ea.	
Union-Sweat	30 ea.		
Union- threaded	30 ea.	30 ea.	
Adaptors -Male	15 ea.	15 ea.	
Female	15 ea.	15 ea.	
Flush bushings	15 ea.	15 ea.	
Caps	100 ea.	100 ea.	
Plugs	15 ea.	15 ea.	
Reducing T	30 ea.	30 ea.	
P-Traps			
Return Bends			
Sanitary T			
Double 90 el's			
Sanitary reducing T			
Valves			
	Type:	Note: There should be at least	
	Gate	type to be used for the class c	
	Ball	on valves. Then 15 each of tl	
	Globe		
	Thermostatic-Mixing		
	Mechanical-mixing		
	Pressure reducing		
	Needle		
	Hose bibs	1/2" only- for copper, galvanize	
Compression coupling			
Repair clamps	15 each 1/2", 3/4" & 1"		

**Plumbing Program**  
**Tool, Equipment, & Materials List**

Shark Bite Fittings Full set of 25 each in 1/2", 3/4" & 1"  
Gas valves and fittings for black iron pipe 3/4" only.

**Fixtures for the Lab**

Toilets	4 different types
Urinal	Wall hung
Pedestal Sink	
Kitchen sink	36" stainless double bowl
Sink cabinet	
Garbage disposal	3/4 hp.
Bar sink	
Laundry Tub	
Cultured marble top	
Under counter bath sink	
Ice maker	
4 Piece shower unit	
Shower/tub one piece	
Hydronic floor heater system	
Dish washer	
Hrinnai tankless water heater	
30 Gal. lowboy quick recovery water heater	
40 Gal. electric water heater	
40 Gallon gas fired hot water heater	

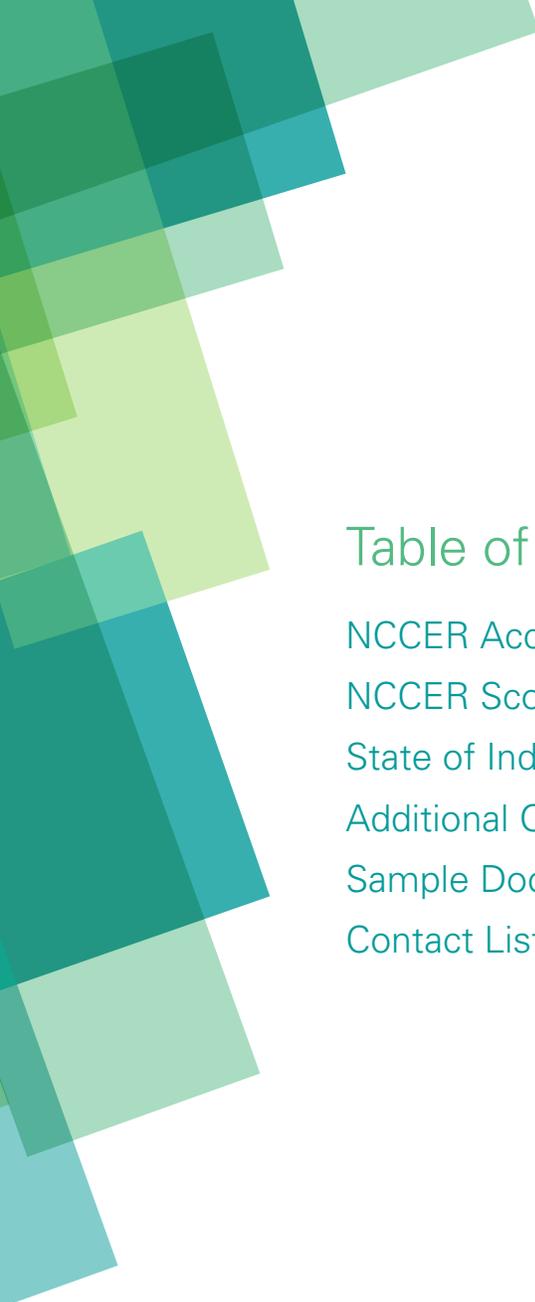
THE STANDARD FOR DEVELOPING CRAFT PROFESSIONALS



# **NCCER Quick Reference**

Answers and Updates for Academic Sponsors

Revised: November 22, 2013



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*NCCER is a not-for-profit 501 (c)(3) education foundation created by the construction industry to develop standardized curriculum with portable credentials and to help address the skilled construction workforce shortage. NCCER is recognized by the industry as the training, assessment, certification, and career development standard for the construction and maintenance industry. For more information visit [www.nccer.org](http://www.nccer.org) or contact NCCER customer service at 888.622.3720.*

# NCCER Accreditation Overview

NCCER's accreditation process ensures that **students** and craft professionals receive **quality training** based on **uniform standards** and criteria. These standards are outlined in the NCCER Accreditation Guidelines and must be adhered to by all NCCER Accredited Training Sponsors and Accredited Assessment Centers.

## Accredited Training Sponsors (ATS) Accredited Educational Facilities (ATEF)

ATSs and ATEFs are entities that have been approved by NCCER as having the resources to effectively conduct a quality training program that utilizes NCCER curricula.

## Curriculum

- Our curricula is developed by industry experts to industry standards
- Compliant with the Department of Labor-Office of Apprenticeship requirements for time-based training
- Aligns with Perkins IV requirements for industry credentials and programs of study

## Training

The training process itself is portable; it is taught across states and in a variety of environments, business, secondary schools, colleges and associations using the same curriculum and standardized process.

- Delivered through Accredited Organizations
- Taught by NCCER, Trained and Certified Instructors
- Recorded in the NCCER Registry

## Instructor Certifications

This program ensures the uniform and consistent delivery of training. Through this program, NCCER certifies the Master Trainer, who in turn certifies the local Craft Instructor. This network of certified instructors assures that NCCER training programs meet the standards of instruction set by the industry.

### Most Common Programs

- **Core Curriculum**
- **Carpentry**
- **Electrical**
- **HVAC**
- **Welding**

## NCCER Registry

In an effort to provide students and craft professionals with industry-recognized credentials and ensure national portability of skills, NCCER maintains a credentialing and certification system through its Registry. This secure online database tracks both training and/or assessments for its participants.

For training, the Registry provides transcripts, certificates and wallet cards to students who successfully complete an NCCER curriculum through an NCCER Accredited Training Sponsor. A transcript, certificate and a wallet card are granted when a trainee completes Core Curriculum or any full level of a craft.\* These industry credentials allow participants to provide easy verification of training for current or potential employers.

*\*Level One trainees must also complete the Core Curriculum to receive a Level One Completion Certificate in most crafts.*

## Credentials

The participants in a training program will get a credential that validates they are “**NCCER Trained**,”

- Credentials are awarded when students reach established benchmarks; for example completing Core Curriculum and level 1 of any craft.
- Qualifying students will get an NCCER card, and on his/her online training transcript it will identify them as “NCCER Trained” and it will detail the specific modules and levels.

## NCCERconnect®

The NCCER Standardized Craft Training curricula online supplement, NCCERconnect®, saves time and money. Apprentices and trainees complete coursework faster while achieving greater knowledge retention that enhances the attainment of skills competency.

### Available on NCCERconnect®

- **Core Curriculum**
- **Your Role in the Green Environment**
- **Heavy Equipment**
- **Welding**
- **Construction Technology Levels 1-4:**
  - **Carpentry**
  - **Construction Technology**
  - **Electrical**
  - **Electronic Systems Technician**
  - **HVAC**
  - **Plumbing**

# NCCER Scope and Engagement

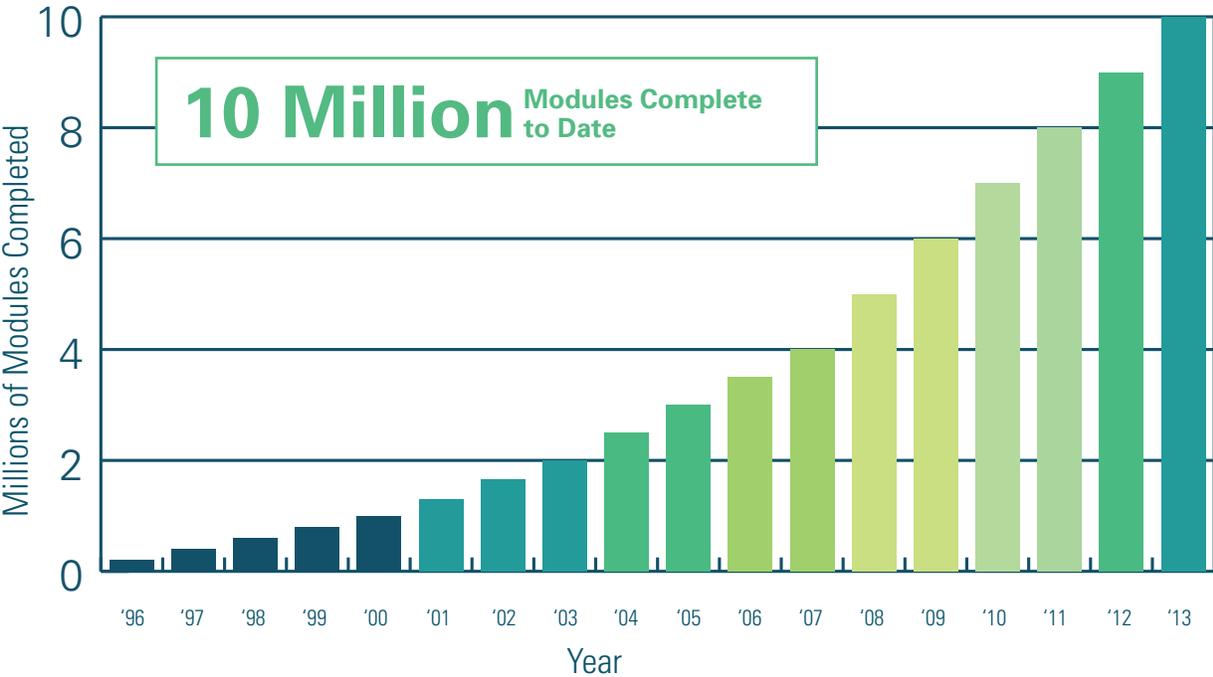
## Participating Sectors and Organizations

<p>Government</p> <ul style="list-style-type: none"> <li>• Job Corps</li> <li>• YouthBuild</li> <li>• Correction</li> <li>• State &amp; Local</li> <li>• Workforce Agencies</li> <li>• Military</li> <li>• State Licensing Agencies</li> </ul>	<p>Workforce</p> <ul style="list-style-type: none"> <li>• Owners</li> <li>• Contractors</li> <li>• Associations</li> <li>• Organized Labor</li> <li>• Leased Labor</li> </ul>	<p>Industry</p> <ul style="list-style-type: none"> <li>• Construction</li> <li>• Pipeline</li> <li>• Manufacturing</li> <li>• Shipbuilding</li> <li>• Petrochemical Energy</li> </ul>	<p>Education</p> <ul style="list-style-type: none"> <li>• Secondary</li> <li>• Community Colleges</li> <li>• Career Colleges</li> <li>• Propriety Schools</li> <li>• Training Academies</li> <li>• Employment Based</li> </ul>
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## Accreditation Status

- 650+ Training Sponsors
- 350+ Assessment Centers (accredited, candidate and applicant status)
- 3500+ Public Schools

## Growth in Modules Completions and Utilization

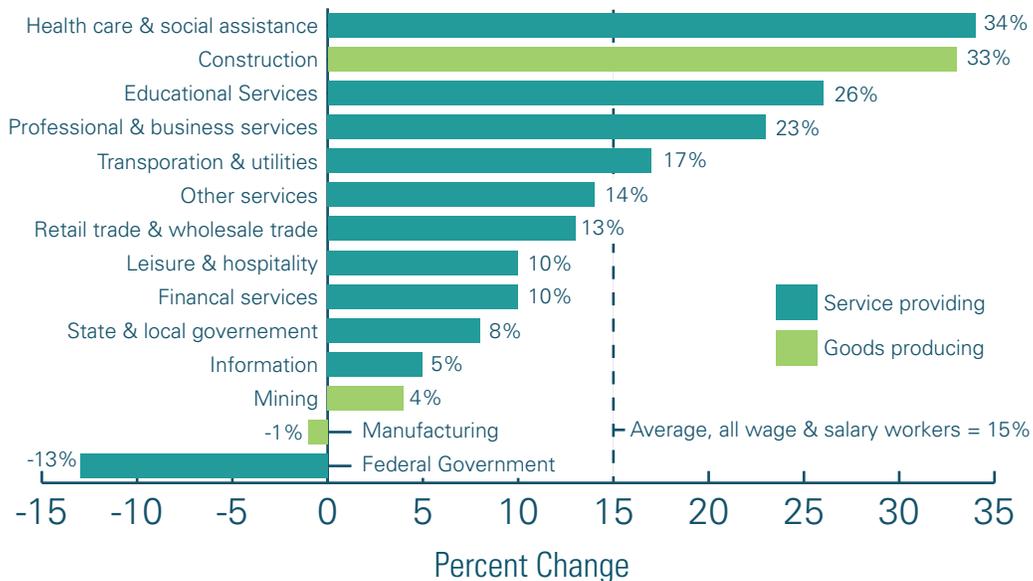


# State of Industry and Career Outlook

## Occupational Outlook 2010-2020

“Both the health care and social assistance sector and the construction sector are projected to grow more than twice as fast as the average for all industries between 2010 and 2020. Growth in health care and social assistance is expected to be driven by increased demand from an aging population. In construction, projected rapid employment growth represents a partial recovery of significant job losses that occurred between 2007 and 2009.”

*Source: Occupational Outlook Quarterly Winter 2011–12*

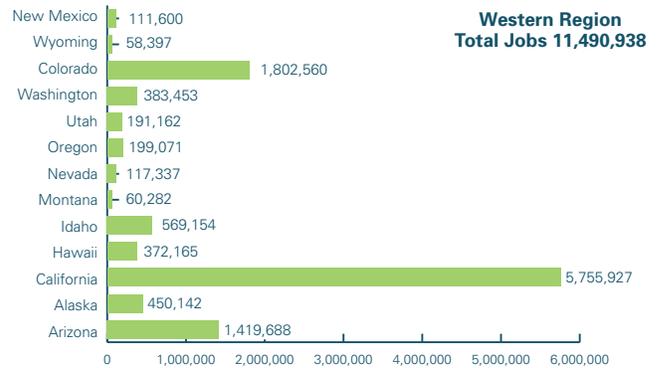
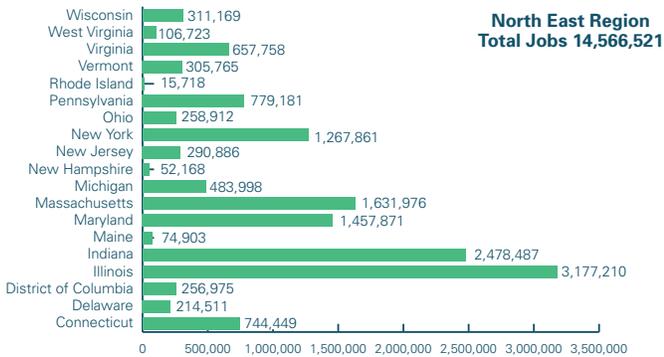
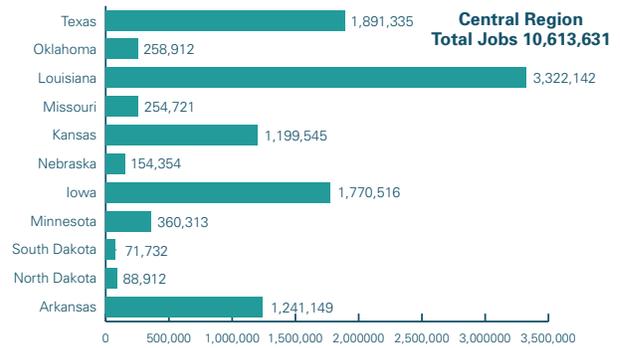
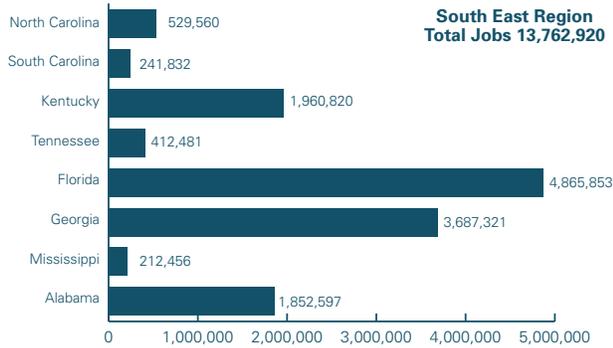


*Percent change in employment of wage and salary workers by industry sector, projected 2010-20*

“I believe strongly that the development of a highly educated workforce is a fundamental element of the expansion and vigor of the state’s economy. Critical to this relationship is Career and Technical Education (CTE).”

*- Bill Ritter, Jr., Governor, State of Colorado*

## Craft Professional Demand through June 2016



### Labor Demand for Industrial Projects

2013-2016

The Construction Labor Market Analyzer® (CLMA)

“The time has come to make career, technical and vocational education a priority in every high school in Indiana.”

- Mike Pence, Governor, State of Indiana

## NCCER Craft Professional Wage Survey Results, 2012

<b>Boiler Maker</b>	<b>\$53,080</b>	<b>\$\$</b>
<b>Carpenter</b>	<b>\$48,756</b>	<b>\$</b>
<b>Electrician</b>	<b>\$53,294</b>	<b>\$\$</b>
<b>Heavy Equipment Operator</b>	<b>\$52,759</b>	<b>\$\$</b>
<b>Industrial Maintenance Mechanic</b>	<b>\$51,251</b>	<b>\$\$</b>
<b>Instrumentation Technician</b>	<b>\$60,234</b>	<b>\$\$\$</b>
<b>Ironworker</b>	<b>\$53,291</b>	<b>\$\$</b>
<b>Millwright</b>	<b>\$52,495</b>	<b>\$\$</b>
<b>Mobile Crane Operator</b>	<b>\$57,559</b>	<b>\$\$</b>
<b>Pipefitter</b>	<b>\$54,737</b>	<b>\$\$</b>
<b>Project Manager</b>	<b>\$89,681</b>	<b>\$\$\$\$\$</b>
<b>Project Supervisor</b>	<b>\$75,180</b>	<b>\$\$\$\$</b>
<b>Rigger</b>	<b>\$51,971</b>	<b>\$\$</b>
<b>Scaffolder</b>	<b>\$49,483</b>	<b>\$</b>
<b>Sheet Metal Worker</b>	<b>\$46,721</b>	<b>\$</b>
<b>Sprinkler Fitter</b>	<b>\$53,959</b>	<b>\$\$</b>
<b>Welder</b>	<b>\$56,904</b>	<b>\$\$</b>

Survey data was provided by 52 voluntary participants from the industrial and commercial construction industries across the United States. Figures above represent average annual salaries for individual craft areas, not including overtime, per diem or other incentives. Crafts for which the number of responses received was insufficient to calculate a valid average are not included in the survey results. All information submitted for this wage survey is considered confidential and is being used in summary. Identification of individual or company respondents is strictly confidential.

# Changing Mindset Towards CTE Across the U.S.

## Examples of the Successful Implementation of NCCER Programs

In the 2011-2012 school year, CEFGA issued more than 7,000 NCCER Credentials to students across the state. The NCCER credential opens doors for Georgia students with the biggest and best construction companies in the world. Companies who hire NCCER credentialed-students know they are getting trained, industry-certified professionals.

*NCCER Training and Credentials: The Backbone of CEFGA's Talent Pipeline*

Currently, The North Carolina Department of Public Instruction (NCDPI) has over 600 NCCER certified instructors teaching in their Career and Technical Education division. In the past three years alone, 13,515 students have earned NCCER credentials. The program's success has been highlighted in the positive high school graduation rate - in 2012 94% of all North Carolina students enrolled in a CTE program graduated high school, compared to 80% of traditional students.

*NCCER Accredited Training Sponsors Best Practice Profiles*

## Quotes on CTE

"The economy for which old vocational education was built to serve no longer exists. CTE in Pennsylvania is designed to meet a dual mission developing students with College Readiness skills and a Career Path. CTE is no longer an either/or choice, but a "BOTH / AND" opportunity for student success."

*Tom Corbett, Governor, State of Pennsylvania*

*Ronald J. Tomalis, Secretary of Education, PA*

"Career and technical education can provide our students with a pathway to success. It can launch entrepreneurs, give kids a reason to finish high school, and create a well-qualified workforce that will encourage business to build here and grow here. We have to give our kids, our future, every opportunity for success. That means quality schools, choices about their education and multiple pathways to success."

*Mike Pence, Governor, State of Indiana*

"Career Technical Education is the "gold standard" for 21st Century Learning and Success. As we develop an economy increasingly rooted in "gold-collar" careers, Career Technical Education engage students in the meaning of learning and starts them - very practically - on their individual pathways to success."

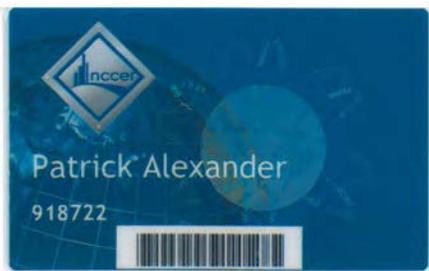
*Gully Stanford, Director, College in Colorado Campaign*

# Sample Documents

## NCCER Certificate



## Wallet Cards



# Sample Documents

## Training Transcript



**THE STANDARD FOR DEVELOPING CRAFT PROFESSIONALS**  
 13614 Progress Blvd • Alachua, Florida 32615 • p. 888.622.7320 F. 386.518.6255 • www.nccer.org

### Official Training Transcript

Below are your credentials from NCCER's National Registry. These industry-recognized credentials give you flexibility in planning your career and ensure your achievements follow you wherever you go.

To access your training online via the Automated National Registry (ANR) web site, go to <https://anr.nccer.org>, click the **Individuals** button, and enter your NCCER card number and PIN (Note: Your card number is below, and also on your NCCER wallet card. The default PIN is the last four digits of your SSN, you can change it after you log in.) The first time you log in you'll need to answer a few security questions.

**NCCER Card #:** 01234567  
**Trainee Name:** Sample Student  
**Sponsor:** YouthBuild USA/YouthBuild  
**Address:** 58 Day St  
 Somerville, MA 02144

**Current Employer/School:**

Module	Description	Instructor	Training Location	Completed
00101-04	Basic Safety	James Harris	YouthBuild USA/YouthBuild International Quad Area YouthBuild	2/26/2013
00102-04	Introduction to Construction Math	James Harris	YouthBuild USA/YouthBuild International Quad Area YouthBuild	2/26/2013
00103-04	Introduction to Hand Tools	James Harris	YouthBuild USA/YouthBuild International Quad Area YouthBuild	2/26/2013
00104-04	Introduction to Power Tools	James Harris	YouthBuild USA/YouthBuild International Quad Area YouthBuild	2/26/2013
00105-04	Introduction to Blueprints	James Harris	YouthBuild USA/YouthBuild International Quad Area YouthBuild	2/26/2013
00106-04	Basic Rigging	James Harris	YouthBuild USA/YouthBuild International Quad Area YouthBuild	2/26/2013
00107-04	Basic Communication Skills	James Harris	YouthBuild USA/YouthBuild International Quad Area YouthBuild	12/4/2012
00108-04	Basic Employability Skills	James Harris	YouthBuild USA/YouthBuild International Quad Area YouthBuild	2/26/2013

**NO ENTRIES BELOW THIS LINE**

Page 1
Printed 5/17/201

## Contact List

<b>Workforce Development Team</b>	<b>Contact</b>	<b>Ext.</b>
Dan Belcher, Director	dbelcher@nccer.org	6936
John Havlik, Manager	jhavlik@nccer.org	6943
Scott Fisher, Customer Service Manager	sfisher@nccer.org	6939
Nicole Kitler, Administrative Assistant	nkitler@nccer.org	6922

<b>For specific questions regarding:</b>	<b>Contact</b>	<b>Ext.</b>
Accreditation and Accreditation forms	KJ Horne	6923
Audits and compliance issues	Danielle Birney	6911
Billing and invoice questions	Sandy Pennell Debra Puckett	6906 6904
Certifications, credentials, wallet cards or how to fill out Registry Forms	Registry Department	6914, 6916, 6917, 6918
Master Trainer Instructor Certification Training Program (MTICTP) or Academy Registrations	Terry Lansdale	6919
Ordering Master Trainer or Craft Instructor Kits	Terry Lansdale	6919
Starting a training program or partnering with industry/education	Workforce Development Department	6936, 6933, 6943
Marketing, materials, logo usage	Christina Bennett	6909
General questions	Customer Service Scott Fisher	6939

For questions about NCCER programs and services,  
please call our toll free number:

**1.888.622.3720**



# Executive Summary

19th Edition 2015



*The Standard for Developing Craft Professionals*

## NOTICE

NCCER was incorporated in 1996.

## DISCLAIMER

NCCER's accreditation process is designed solely to achieve the purposes set forth in this document. NCCER does not claim or intend to certify the compliance of any training program, sponsor, or employer with any local, state, or federal regulations, including, but not limited to, any regulation relating to apprenticeship or training, equal employment opportunity, education, or any other applicable statute. It is not the policy or the intent of NCCER to train illegal or undocumented workers.

Any use of he/she in this document is purely incidental and is not intended to show partiality in regard to gender.

## REVIEWED BY THE NCCER BOARD OF TRUSTEES

July, 1993 - Original

November, 1994 - First Edition

November, 1995 - Second Edition

October, 1997 - Third Edition

December, 1998 - Fourth Edition

January, 2000 - Fifth Edition

January, 2001 - Sixth Edition

March, 2002 – Seventh Edition

February, 2003 – Eighth Edition

August, 2004 – Ninth Edition

March, 2005 – Tenth Edition

June, 2006 – Eleventh Edition

May, 2007 – Twelfth Edition

January, 2008 – Thirteenth Edition

January, 2009 – Fourteenth Edition

January, 2010 – Fifteenth Edition

March, 2011 – Sixteenth Edition

January, 2012 – Seventeenth Edition

April, 2014 – Eighteenth Edition

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13614 Progress Boulevard

Alachua, FL 32615

Phone: 386-518-6500

Fax: 386-518-6303

**N**CCER is a not-for-profit 501(c) (3) education foundation serving a broad spectrum of the construction and maintenance industries. NCCER is supported by the participation of trade associations, contractors, schools, construction and maintenance users, pipeline operators, manufacturers, and third-party training providers. NCCER is governed by a Board of Trustees consisting of representatives from contributing contractors, owners and NCCER partner associations. All Trustees are recognized for their expertise in construction or construction-related issues. For a complete listing of NCCER's Board of Trustees please visit our website at [www.nccer.org/board-of-trustees](http://www.nccer.org/board-of-trustees).

Working in partnership with various sectors of the construction and maintenance industries, NCCER has dedicated itself to developing and maintaining quality curricula and a training process that is nationally recognized, standardized, portable, and competency-based. NCCER has developed standards for the operation of accredited training programs to ensure that a standardized quality education is provided for all construction and maintenance trainees.

In addition, NCCER, in partnership with contractors, industry associations, and owner groups, has created a national industry-standardized assessment and certification process for the construction and maintenance industries. The goal of the program is to evaluate the competence level (knowledge and skills) of experienced workers.

NCCER accredits training and assessment programs. Organizations interested in offering training will pursue Accredited Training Sponsor status, and those interested in offering assessments or performance verifications will pursue the path of Accredited Assessment Center.

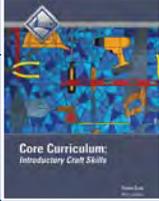
**When considering application for accreditation, the applicant should examine these guidelines in detail. This examination will assist the organization in determining its capability to meet and sustain the conditions of NCCER's National Standardized Training Process and/or National Craft Assessment and Certification Program.**





# Core Curriculum: Introductory Craft Skills

## CORE CURRICULUM



INTRODUCTORY  
CRAFT SKILLS

REVISED!

### Curriculum Notes

- Core Curriculum is a prerequisite to most Level 1 completions and must be purchased separately.
- 72.5 Hours; plus 7.5 Elective/Optional Hours
- Revised: 2015, Fifth Edition
- Trainee Guide and trainee modules are in full color.
- New printed instructor's package includes lesson plans, instructor's copy of trainee guide with an access code to download TestGen software, module exams, PowerPoints®, and performance profile sheets from [www.nccerirc.com](http://www.nccerirc.com).
- A Spanish translation of the third edition is available. Please see NCCER's online catalog for more information. A Spanish translation of the 5th edition is underway
- A basic construction math workbook with practice problems is included with the instructor's package.

<b>HARDCOVER</b>	<b>ISBN</b>
Trainee Guide: \$54	<b>978-0-13-413143-6</b>
<b>PAPERBACK</b>	<b>ISBN</b>
Trainee Guide: \$51	<b>978-0-13-413098-9</b>
Instructor's Package: \$51	<b>978-0-13-420128-3</b>

## MODULES

All of the modules listed below are included in the Trainee and Instructor Guide(s) listed above. The following ISBN and pricing information is for ordering individual modules only.

### Basic Safety (12.5 Hours)

Trainee \$19 ISBN 978-0-13-407556-3  
 Instructor \$19 ISBN 978-0-13-412939-6  
 (Module ID 00101-15) Presents basic jobsite safety information to prepare workers for the construction environment. Describes the common causes of workplace incidents and accidents and how to avoid them. Introduces common PPE, including equipment required for work at height, and its proper use. Information related to safety in several specific environments, including welding areas and confined spaces, is also provided.

### Introduction to Construction Math (10 Hours)

Trainee \$19 ISBN 978-0-13-416370-3  
 Instructor \$19 ISBN 978-0-13-413140-5  
 (Module ID 00102-15) Reviews basic math skills related to the construction trades and demonstrates how they apply to the trades. Covers multiple systems of measurement, decimals, fractions, and basic geometry.

### Introduction to Hand Tools (10 Hours)

Trainee \$19 ISBN 978-0-13-412937-2  
 Instructor \$19 ISBN 978-0-13-412886-3  
 (Module ID 00103-15) Introduces common hand tools used in a variety of construction crafts. Identifies tools and how to safely use them. Proper hand tool maintenance is also presented.

### Introduction to Power Tools (10 Hours)

Trainee \$19 ISBN 978-0-13-412901-3  
 Instructor \$19 ISBN 978-0-13-412902-0  
 (Module ID 00104-15) Identifies and describes the operation of many power tools common in the construction environment. Provides instruction on proper use, as well as on safe-handling guidelines and basic maintenance.

### Introduction to Construction Drawings (10 Hours)

Trainee \$19 ISBN 978-0-13-412903-7  
 Instructor \$19 ISBN 978-0-13-412904-4  
 (Module ID 00105-15) Introduces the basic elements of construction drawings. The common components of drawings are presented, as well as the most common drawing types. The use of drawing scales and how to measure drawings is also covered.

### Introduction to Basic Rigging (7.5 Elective Hours)

Trainee \$19 ISBN 978-0-13-412905-1  
 Instructor \$19 ISBN 978-0-13-412900-6  
 (Module ID 00106-15) Provides basic information related to rigging and rigging hardware, such as slings, rigging hitches, and hoists. Emphasizes safe working habits in the vicinity of rigging operations.

### Basic Communication Skills (7.5 Hours)

Trainee \$19 ISBN 978-0-13-412899-3  
 Instructor \$19 ISBN 978-0-13-412898-6  
 (Module ID 00107-15) Provides good techniques for effective communication on the job. Includes examples that emphasize the importance of both written and verbal communication skills. Describes the importance of reading skills in the construction industry and covers proper techniques to use in a variety of different written communication formats.

### Basic Employability Skills (7.5 Hours)

Trainee \$19 ISBN 978-0-13-412896-2  
 Instructor \$19 ISBN 978-0-13-412895-5  
 (Module ID 00108-15) Describes the opportunities offered by the construction trades. Discusses critical thinking and essential problem-solving skills for the construction industry. Also identifies and discusses positive social skills and their value in the workplace.

### Introduction to Material Handling (5 Hours)

Trainee \$19 ISBN 978-0-13-412892-4  
 Instructor \$19 ISBN 978-0-13-412887-0  
 (Module ID 00109-15) Describes the hazards associated with handling materials and provides techniques to avoid both injury and property damage. Common material-handling equipment is also introduced.

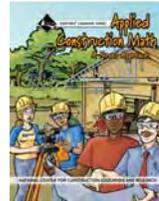
Ordering information for *Core Curriculum*, Fourth Edition:

<b>HARDCOVER</b>	<b>ISBN</b>
Trainee Guide: \$54	<b>978-0-13-608636-9</b>
<b>PAPERBACK</b>	<b>ISBN</b>
Trainee Guide: \$51	<b>978-0-13-608637-6</b>
Instructor's Guide: \$51	<b>978-0-13-608639-0</b>

**NCCERconnect**, our complete online solution is available. Visit [www.nccer.org/online-solutions](http://www.nccer.org/online-solutions) for more information.

Enhance your construction training with these great supplemental Core Companions. The following titles are an excellent resource for your existing program. They can be used on a stand-alone basis or in combination with the Core Curriculum.

## Applied Construction Math



Published: 2006

<b>PAPERBACK</b>	<b>ISBN</b>
Trainee Guide: \$27	<b>978-0-13-227298-8</b>
Instructor's Edition: \$27	<b>978-0-13-227300-8</b>

(includes Resource CD)

*Applied Construction Math: A Novel Approach* features a story that students can relate to and math skills they never thought they could grasp. Its innovative style motivates students to follow the lessons by associating math with events that they may encounter in their real lives. Students will see that learning math can be something as exciting as building a new house as they follow along with Mr. Whyte and his construction class as they build the perfect house. Thirteen chapters teach basic math skills, including:

- Division
- Decimals/Percentages
- Reading Measurements
- Calculating the Area
- Powers of Ten
- Linear Measure, Angles, Volumes, Pressure, and Slopes
- Solving for Unknowns
- Square Inches, Feet, and Yards
- Volume

## Safety Orientation



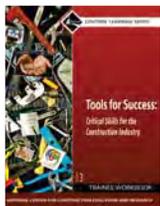
10 Hours  
Revised: 2004  
Module ID 75501-04

<b>PAPERBACK</b>	<b>ISBN</b>
Pocket Guide: \$14	<b>978-0-13-163612-5</b>
Instructor's Guide: \$24	<b>978-0-13-163613-2</b>

(full size; includes tests and PowerPoints)

See p. 95 for more information.

## Tools for Success



### Critical Skills for the Construction Industry

Revised: 2009,  
Third Edition

#### PAPERBACK

#### ISBN

Trainee Workbook: \$29     **978-0-13-610649-4**  
Instructor's Handbook: \$29     **978-0-13-610650-0**

This workbook is designed for employees entering the construction industry and has been reviewed and updated with input from construction and training professionals. *First Impressions: Getting a Job* features tips on finding a job, interviewing, filling out applications, and resume writing.

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#### ISBN

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Instructor's Package: \$27     **978-0-13-417725-0**

See p. 66 for more information

Ordering information for *Your Role in the Green Environment*,  
LEED Version 3:

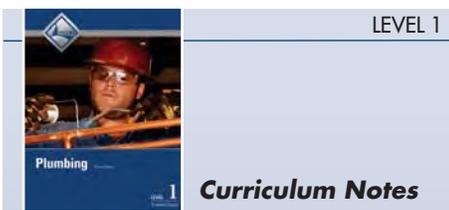
#### PAPERBACK

#### ISBN

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## L1 PLUMBING



LEVEL 1

### Curriculum Notes

- 217.5 Hours (Includes 72.5 hours of Core Curriculum which is a prerequisite for completion and must be purchased separately. See p. 10 for ordering information.)
- Revised: 2012, Fourth Edition
- Trainee Guide and trainee modules are in full color.
- Instructor's Guide includes access code to download TestGen software, module exams, and performance profile sheets from [www.nccerirc.com](http://www.nccerirc.com).

PAPERBACK	ISBN
Trainee Guide: \$67	978-0-13-292143-5
Instructor's Guide: \$67	978-0-13-292163-3

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<b>PowerPoint® Presentation Slides</b> ISBN 978-0-13-292164-0	\$40

### MODULES

All of the modules listed below are included in the Trainee and Instructor Guide(s) listed above. The following ISBN and pricing information is for ordering individual modules only.

#### Introduction to the Plumbing Profession

(5 Hours)

Trainee \$19	ISBN 978-0-13-292320-0
Instructor \$19	ISBN 978-0-13-292333-0

(Module ID 02101-12) Introduces trainees to career options in the plumbing profession. Provides a history of plumbing and also discusses the current technology, industries, and associations of the plumbing profession. Also reviews human relations and safety skills.

#### Plumbing Safety (22.5 Hours)

Trainee \$19	ISBN 978-0-13-292321-7
Instructor \$19	ISBN 978-0-13-292334-7

(Module ID 02102-12) Discusses the causes of accidents and their consequences including delays, increased expenses, injury, and loss of life. Reviews the types and proper use of personal protective equipment (PPE). Instructs trainees in the use of critical safety information including HazCom, safety signs, signals, lockout/tagout, and emergency response. Covers confined-space safety, and reviews safety issues related to hand and power tools.

#### Tools of the Plumbing Trade (10 Hours)

Trainee \$19	ISBN 978-0-13-292322-4
Instructor \$19	ISBN 978-0-13-292336-1

(Module ID 02103-12) Instructs trainees in the care and use of hand and power tools they will use on the job. Provides information needed to select the appropriate tools for different tasks, and reviews tool maintenance and safety issues.

#### Introduction to Plumbing Math (12.5 Hours)

Trainee \$19	ISBN 978-0-13-292323-1
Instructor \$19	ISBN 978-0-13-292337-8

(Module ID 02104-12) Reviews basic math concepts, such as whole numbers, fractions, decimals, and squares, and demonstrates how they apply to on-the-job situations. Explains how to measure pipe using fitting tables and framing squares and how to calculate 45-degree offsets.

#### Introduction to Plumbing Drawings (17.5 Hours)

Trainee \$19	ISBN 978-0-13-292324-8
Instructor \$19	ISBN 978-0-13-292338-5

(Module ID 02105-12) Introduces different types of plumbing drawings and discusses how to interpret and apply them when laying out and installing plumbing systems. Explains the symbols used in plumbing and mechanical drawings, and reviews isometric, oblique, orthographic, and schematic drawings. Requires trainees to render plumbing drawings and to recognize how code requirements apply to plumbing drawings.

#### Plastic Pipe and Fittings (12.5 Hours)

Trainee \$19	ISBN 978-0-13-292325-5
Instructor \$19	ISBN 978-0-13-292339-2

(Module ID 02106-12) Introduces different types of plastic pipe and fittings used in plumbing applications, including ABS, PVC, CPVC, PE, PEX, and PB. Describes how to measure, cut, join, and support plastic pipe according to the manufacturer's instructions and applicable codes. Also discusses pressure testing of plastic pipe once installed.

#### Copper Pipe and Fittings (12.5 Hours)

Trainee \$19	ISBN 978-0-13-292327-9
Instructor \$19	ISBN 978-0-13-292340-8

(Module ID 02107-12) Discusses sizing, labeling, and applications of copper pipe and fittings, and reviews the types of valves that can be used on copper pipe systems. Explains proper methods for cutting, joining, and installing copper pipe. Also addresses insulation, pressure testing, seismic codes, and handling and storage requirements.

#### Cast-Iron Pipe and Fittings (12.5 Hours)

Trainee \$19	ISBN 978-0-13-292328-6
Instructor \$19	ISBN 978-0-13-292341-5

(Module ID 02108-12) Introduces hub-and-spigot and no-hub cast-iron pipe and fittings and their applications in DWV systems. Reviews material properties, storage and handling requirements, and fittings and valves. Covers joining methods, installation, and testing.

#### Carbon Steel Pipe and Fittings (12.5 Hours)

Trainee \$19	ISBN 978-0-13-292329-3
Instructor \$19	ISBN 978-0-13-292342-2

(Module ID 02109-12) Discusses threading, labeling, and sizing of steel pipe and reviews the differences between domestic and imported pipe. Covers the proper techniques for measuring, cutting, threading, joining, and hanging steel pipe. Also reviews corrugated stainless steel tubing.

#### Introduction to Plumbing Fixtures (7.5 Hours)

Trainee \$19	ISBN 978-0-13-292330-9
Instructor \$19	ISBN 978-0-13-292344-6

(Module ID 02110-12) Discusses the proper applications of code-approved fixtures in plumbing installations. Reviews the different types of fixtures and the materials used in them. Also covers storage, handling, and code requirements.

#### Introduction to Drain, Waste, and Vent (DWV) Systems (10 Hours)

Trainee \$19	ISBN 978-0-13-292331-6
Instructor \$19	ISBN 978-0-13-292345-3

(Module ID 02111-12) Explains how DWV systems remove waste safely and effectively. Discusses how system components, such as pipe, drains, traps, and vents work. Reviews drain and vent sizing, grade, and waste treatment. Also discusses how building sewers and sewer drains connect the DWV system to the public sewer system.

#### Introduction to Water Distribution Systems (10 Hours)

Trainee \$19	ISBN 978-0-13-292332-3
Instructor \$19	ISBN 978-0-13-292346-0

(Module ID 02112-12) Identifies the major components of water distribution systems and describes their functions. Reviews water sources and treatment methods and covers supply and distribution for the different types of systems that trainees will install on the job.

## L2 PLUMBING

LEVEL 2

### Curriculum Notes

- 170 Hours
- Revised: 2013, Fourth Edition
- Trainee Guide and trainee modules are in full color.
- New printed instructor's package includes lesson plans, instructor's copy of trainee guide with an access code to download TestGen software, module exams, PowerPoints®, and performance profile sheets from [www.nccerirc.com](http://www.nccerirc.com).

PAPERBACK	ISBN
Trainee Guide: \$94	978-0-13-314850-3
Instructor's Package: \$94	978-0-13-414123-7

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### MODULES

All of the modules listed below are included in the Trainee and Instructor Guide(s) listed above. The following ISBN and pricing information is for ordering individual modules only.

#### Plumbing Math Two (15 Hours)

Trainee \$19	ISBN 978-0-13-340275-9
Instructor \$19	ISBN 978-0-13-340287-2

(Module ID 02201-13) Explains the Pythagorean theorem and reviews methods for laying out square corners. Discusses the techniques used to calculate simple and rolling offsets, as well as offsets on parallel runs of pipe.

#### Reading Commercial Drawings (20 Hours)

Trainee \$19	ISBN 978-0-13-340276-6
Instructor \$19	ISBN 978-0-13-340288-9

(Module ID 02202-13) Explains how to identify and interpret civil, architectural, structural, HVAC/mechanical, plumbing, and electrical drawings. Discusses how to ensure accurate dimensions, generate RFIs, and locate plumbing entry points, as well as how to establish piping routes and fixture locations. Isometric drawings, material takeoffs, approved submittal data, and Building Information Management (BIM), are also covered.

## Plumbing Level 2 (continued)

### Structural Penetrations, Insulation, and Fire-Stopping (20 Hours)

Trainee \$19 ISBN 978-0-13-340277-3  
Instructor \$19 ISBN 978-0-13-340289-6  
(Module ID 02203-13) Introduces methods for adjusting structural members, insulating pipe, and installing fire-stopping. Covers reinforcement techniques for modified structural members; how to measure, cut, and install fiberglass and flexible foam insulation; and how to identify walls, floors, and ceilings that require fire-stopping.

### Installing and Testing DWV Piping (25 Hours)

Trainee \$19 ISBN 978-0-13-340278-0  
Instructor \$19 ISBN 978-0-13-340291-9  
(Module ID 02204-13) Explains how to locate, install, connect, and test a complete drain, waste, and vent (DWV) system. Discusses how to develop material takeoffs, set up and use levels, locate building sewers and building drains, locate fixtures, and test a DWV system.

### Installing Roof, Floor, and Area Drains (5 Hours)

Trainee \$19 ISBN 978-0-13-340279-7  
Instructor \$19 ISBN 978-0-13-340292-6  
(Module ID 02205-13) Covers the proper techniques for locating, installing, and connecting roof, floor, and area drains and floor sinks according to code. Also discusses waterproof membranes and flashing, drain components, shower pans, trap primers, and proper drain applications.

### Types of Valves (5 Hours)

Trainee \$19 ISBN 978-0-13-340281-0  
Instructor \$19 ISBN 978-0-13-340294-0  
(Module ID 02207-13) Reviews types of valves, their components, and applications. Also covers valve servicing.

### Installing and Testing Water Supply Piping (20 Hours)

Trainee \$19 ISBN 978-0-13-340280-3  
Instructor \$19 ISBN 978-0-13-340293-3  
(Module ID 02206-13) Explores the proper techniques for locating, installing, and testing complete water service and distribution systems, including meters, water heaters, water softeners, and hose bibbs. Introduces basic backflow and water hammer prevention, and discusses the installation of shower and tub valves, ice maker and washing machine boxes, and pipe stubouts and supports.

### Installing Fixtures and Valves (20 Hours)

Trainee \$19 ISBN 978-0-13-340283-4  
Instructor \$19 ISBN 978-0-13-340295-7  
(Module ID 02208-13) Covers the installation of basic plumbing fixtures, including bathtubs, shower stalls, lavatories, sinks, water closets, and urinals. Reviews the installation of associated valves, faucets, and components. Also discusses how to connect appliances such as dishwashers, food-waste disposers, refrigerators and ice makers, and washing machines.

### Basic Electricity (10 Hours)

Trainee \$19 ISBN 978-0-13-340285-8  
Instructor \$19 ISBN 978-0-13-340297-1  
(Module ID 02210-13) Introduces electrical safety and the principles of electricity including voltage, current, resistance, and power. Includes important electrical formulas, circuitry, and common plumbing-related electrical applications.

### Installing Water Heaters (10 Hours)

Trainee \$19 ISBN 978-0-13-340284-1  
Instructor \$19 ISBN 978-0-13-340296-4  
(Module ID 02209-13) Discusses gas-fired, electric, tankless, heat pump, and indirect water heaters, components, and applications. Reviews proper installation and testing techniques and covers the latest code requirements for water heaters.

### Fuel Gas Systems (20 Hours)

Trainee \$19 ISBN 978-0-13-340286-5  
Instructor \$19 ISBN 978-0-13-340298-8  
(Module ID 02211-13) Introduces techniques for safe handling of natural gas, liquefied petroleum gas, and fuel oil. Reviews fuel gas and fuel oil safety precautions and potential hazards, applications, systems installation, and testing.

## L3 PLUMBING

LEVEL 3

### Curriculum Notes

- 160 Hours
- Revised: 2014, Fourth Edition
- Trainee Guide and trainee modules are in full color.
- New printed instructor's package includes lesson plans, instructor's copy of trainee guide with an access code to download TestGen software, module exams, PowerPoints®, and performance profile sheets from [www.nccerirc.com](http://www.nccerirc.com).

### PAPERBACK

ISBN

Trainee Guide: \$94 978-0-13-340424-1  
Instructor's Package: \$94 978-0-13-414122-0

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### MODULES

All of the modules listed below are included in the Trainee and Instructor Guide(s) listed above. The following ISBN and pricing information is for ordering individual modules only.

### Applied Math (17.5 Hours)

Trainee \$19 ISBN 978-0-13-378271-4  
Instructor \$19 ISBN 978-0-13-378283-7  
(Module ID 02301-14) Reviews math concepts, including weights and measures, area and volume, temperature, pressure, and force. Also describes the six simple machines: inclined planes, levers, pulleys, wedges, screws, and wheels and axles.

### Sizing and Protecting the Water Supply System (30 Hours)

Trainee \$19 ISBN 978-0-13-378272-1  
Instructor \$19 ISBN 978-0-13-378280-6  
(Module ID 02312-14) Teaches techniques for sizing water supply systems, including calculating system requirements and demand, developed lengths, and pressure drops. Reviews the factors that can reduce efficiency of water supply piping. Introduces different backflow prevention devices and explains how they work, where they are used, and how they are installed in water supply systems.

### Potable Water Supply Treatment (15 Hours)

Trainee \$19 ISBN 978-0-13-378273-8  
Instructor \$19 ISBN 978-0-13-378281-3  
(Module ID 02303-14) Explains how to disinfect, filter, and soften water supply systems. Discusses how to troubleshoot water supply problems, flush out visible contaminants from a plumbing system, and disinfect a potable water plumbing system.

### Types of Venting (20 Hours)

Trainee \$19 ISBN 978-0-13-378275-2  
Instructor \$19 ISBN 978-0-13-378285-1  
(Module ID 02305-14) Reviews the different types of vents that can be installed in a DWV system and explains how they work. Also teaches design and installation techniques.

### Sizing DWV and Storm Systems (20 Hours)

Trainee \$19 ISBN 978-0-13-378433-9  
Instructor \$19 ISBN 978-0-13-378430-5  
(Module ID 02306-14) Explains how to calculate drainage fixture units for waste systems. Reviews how to size drain, waste, and vent (DWV) systems; storm drainage systems; and roof storage and drainage systems.

### Sewage Pumps and Sump Pumps (12.5 Hours)

Trainee \$19 ISBN 978-0-13-378276-9  
Instructor \$19 ISBN 978-0-13-378286-8  
(Module ID 02307-14) Discusses the installation, diagnosis, and repair of pumps, controls, and sumps in sewage and storm water removal systems.

### Corrosive-Resistant Waste Piping (7.5 Hours)

Trainee \$19 ISBN 978-0-13-378277-6  
Instructor \$19 ISBN 978-0-13-378287-5  
(Module ID 02308-14) Discusses corrosive wastes and reviews related safety issues and hazard communications. Discusses how to determine when corrosive-resistant waste piping needs to be installed, as well as how to correctly select and properly connect different types of piping.

### Compressed Air (10 Hours)

Trainee \$19 ISBN 978-0-13-378278-3  
Instructor \$19 ISBN 978-0-13-378288-2  
(Module ID 02309-14) Explains the principles of compressed air systems and describes their components and accessories. Reviews installation and periodic servicing of air compressor systems.

### Service Plumbing (27.5 Hours)

Trainee \$19 ISBN 978-0-13-378279-0  
Instructor \$19 ISBN 978-0-13-378289-9  
(Module ID 02311-14) Covers the troubleshooting and repair of fixtures, valves, and faucets in accordance with code and safety guidelines. Explains how to diagnose and repair water supply and drainage piping, water heaters, and other appliances and fixtures. Describes the effects of corrosion, freezing, and hard water on plumbing systems.

## L4 PLUMBING

LEVEL 4

### Curriculum Notes

- 145 Hours
- Revised: 2014, Fourth Edition
- Trainee Guide and trainee modules are in full color.
- New printed instructor's package includes lesson plans, instructor's copy of trainee guide with an access code to download TestGen software, module exams, PowerPoints®, and performance profile sheets from [www.nccerirc.com](http://www.nccerirc.com).

### PAPERBACK

ISBN

Trainee Guide: \$94

978-0-13-382422-3

Instructor's Package: \$94

978-0-13-417727-4

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### MODULES

All of the modules listed below are included in the Trainee and Instructor Guide(s) listed above. The following ISBN and pricing information is for ordering individual modules only.

#### Business Principles for Plumbers (15 Hours)

Trainee \$19

ISBN 978-0-13-378599-9

Instructor \$19

ISBN 978-0-13-378645-3

(Module ID 02401-14) Introduces trainees to concepts and practices that are essential for competitive, successful plumbing businesses. Also covers basic business accounting and project estimating, as well as techniques for cost control and task organization.

#### Fundamentals of Crew Leadership (20 Hours)

(Module ID 46101-11)

Trainee \$40

ISBN 978-0-13-378601-9

Instructor \$40

ISBN 978-0-13-378649-1

#### Water Pressure Booster and Recirculation Systems (12.5 Hours)

Trainee \$19

ISBN 978-0-13-378602-6

Instructor \$19

ISBN 978-0-13-378651-4

(Module ID 02403-14) Builds on trainees' previous experience with pumps, storage tanks, controls, and pipes and fittings by teaching them to assemble those components into systems that boost water pressure and provide hot water.

#### Indirect and Special Waste (17.5 Hours)

Trainee \$19

ISBN 978-0-13-378603-3

Instructor \$19

ISBN 978-0-13-378655-2

(Module ID 02404-14) Describes the code requirements and installation procedures for systems that protect against contamination from indirect and special waste.

#### Hydronic and Solar Heating Systems (17.5 Hours)

Trainee \$19

ISBN 978-0-13-378605-7

Instructor \$19

ISBN 978-0-13-378658-3

(Module ID 02405-14) Introduces the basic types of hydronic and solar heating systems and their components. Reviews hydronic and solar heating system layout, installation, testing, and balancing, and also discusses methods that inhibit corrosion in hydronic or solar heating systems.

#### Codes (12.5 Hours)

Trainee \$19

ISBN 978-0-13-378606-4

Instructor \$19

ISBN 978-0-13-378659-0

(Module ID 02406-14) Discusses the different codes used by plumbers across the country and explains how those codes are written, adopted, modified, and implemented.

#### Private Water Supply Systems (10 Hours)

Trainee \$19

ISBN 978-0-13-378611-8

Instructor \$19

ISBN 978-0-13-378660-6

(Module ID 02408-14) Describes the operation of pumps and well components. In addition, reviews the qualities of good wells and how to assemble and disassemble pumps and components.

#### Private Waste-Disposal Systems (10 Hours)

Trainee \$19

ISBN 978-0-13-378635-4

Instructor \$19

ISBN 978-0-13-378661-3

(Module ID 02409-14) Describes the types of private waste-disposal systems, discusses the maintenance and installation of these systems, and explains how to determine the local code requirements for these systems. In addition, covers percolation tests and sewage system planning and layout.

#### Swimming Pools and Hot Tubs (7.5 Hours)

Trainee \$19

ISBN 978-0-13-378637-8

Instructor \$19

ISBN 978-0-13-378663-7

(Module ID 02410-14) Introduces trainees to plumbing systems in swimming pools, hot tubs, and spas.

#### Plumbing for Mobile Homes and Travel Trailers (7.5 Hours)

Trainee \$19

ISBN 978-0-13-378641-5

Instructor \$19

ISBN 978-0-13-378664-4

(Module ID 02411-14) Describes the location and layout of plumbing systems for mobile home and travel trailer parks. Reviews how to design and lay out a system, how to connect water and sewer lines to a mobile home, and how to estimate materials for the park.

#### Introduction to Medical Gas and Vacuum Systems (15 Hours)

Trainee \$19

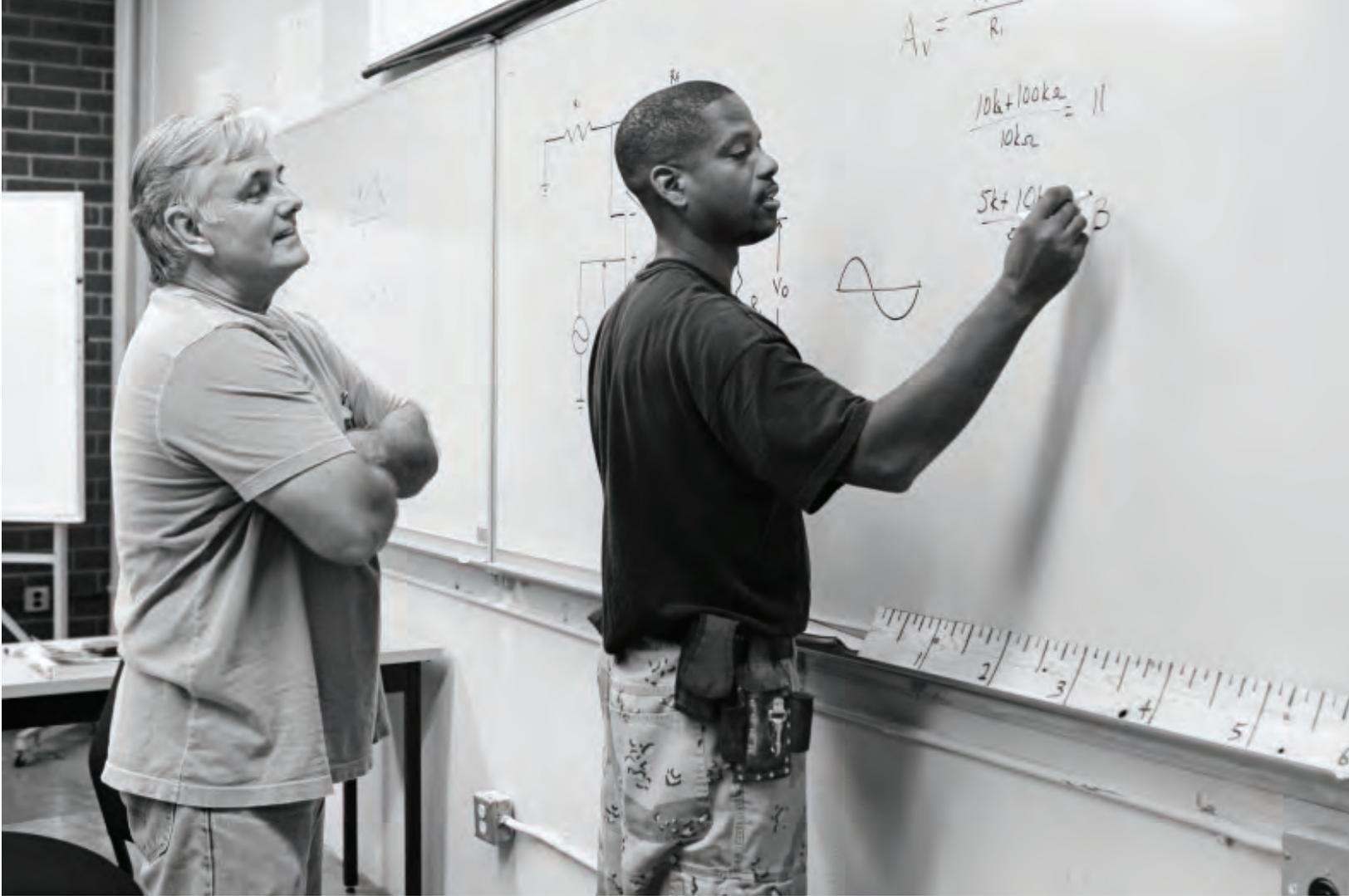
ISBN 978-0-13-409858-6

Instructor \$19

ISBN 978-0-13-409859-3

(Module ID 02412-14) Provides an introduction to the various types of medical gas and vacuum systems used in health care facilities today. Covers the system requirements and professional qualifications required by code, describes common types of medical gas and vacuum systems, and introduces the safety requirements observed when installing, testing, and servicing these systems.





# Accredited Training and Education Facility

Procedure Manual  
January 2012



*The Standard for Developing Craft Professionals*

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## INTRODUCTION

### 1.0.0 TRAINING PHILOSOPHY

Recognizing the industry's responsibilities to the general public and its effect on the economy and society, NCCER is dedicated to developing and maintaining a standardized training process in partnership with the construction and maintenance industries. A schematic overview of the process is shown below.

**This process is available without discrimination on the basis of race, color, religion, national origin, gender, age, veteran status, disability, sexual orientation, or any other reason prohibited by local, state, or federal regulations.**

**It is not the policy or intent of NCCER to train illegal or undocumented workers.**

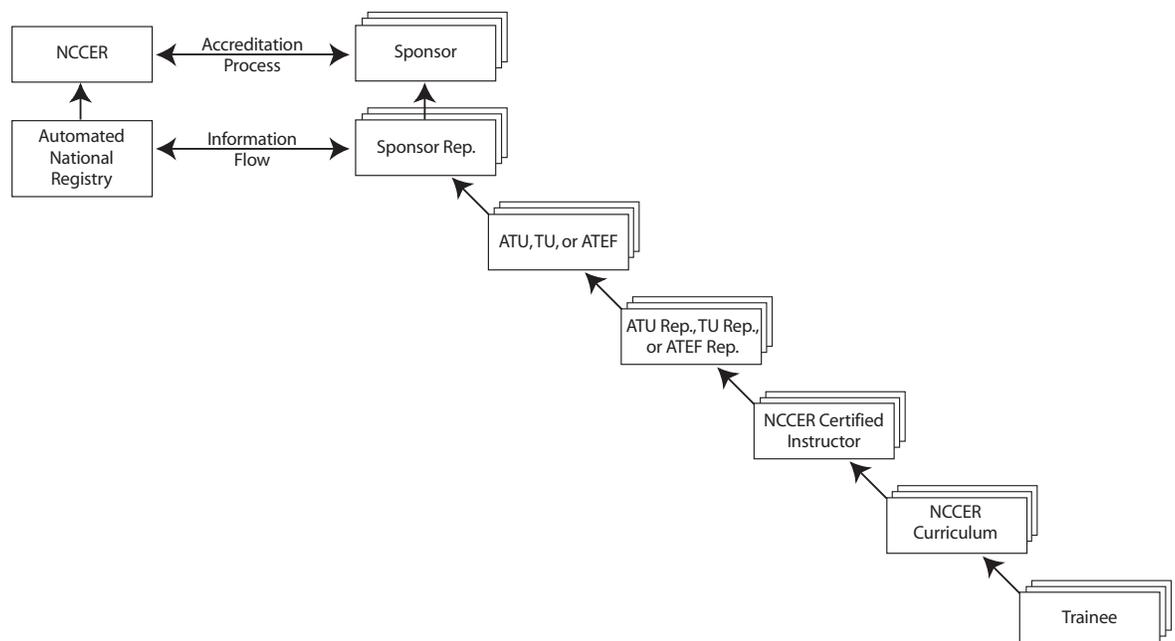
The process develops specialized knowledge and skills required of workers employed in the construction and maintenance industries.

The training process itself is portable, meaning that the knowledge and skills learned by trainees/workers are taken from project to project, state to state, and company to company, regardless of type

and size. A significant trait of the standardized training process is flexibility. Training can be conducted in numerous locations, such as chapters of trade associations, contractor and company facilities, plants, project sites, and secondary, post-secondary, vocational, and technical schools. In addition, the process can be used to implement a wide range of training methodologies that range from traditional craft or apprenticeship training through task, upgrade, and multi-skills training. Even distance-learning can be implemented with the standardized training process.

NCCER accreditation will elevate training in the United States by establishing a minimum quality benchmark. This process will assist organizations in developing and/or improving standardized training programs that effectively match their resources and operating conditions while responding to industry needs. NCCER accreditation will recognize training organizations that meet the minimum standards of competence, warranting public and professional confidence.

### The Standardized Training Process



This, in turn, will foster national unity in construction and maintenance training practices for the mutual benefit of the individual, the industry, and the users of the industry's many products and services.

## 2.0.0 BENEFITS OF TRAINING

The following points provide the practical basis for the NCCER standardized training process:

- As industries compete more fiercely for fewer qualified workers, a professional, accredited training program that offers industry-recognized credentials and a clearly defined career path will attract and retain high-caliber workers.
- In today's highly competitive markets, clients demand increased project quality. Only those contractors with trained and skilled workers capable of meeting that demand will succeed.
- Standardized training will create a national pool of construction and maintenance workers with documented, portable credentials.
- Training improves productivity, which increases profitability.
- Standardized training will establish construction and maintenance industries as industries with credible career opportunities rather than just jobs.
- Career paths defined through standardized training will improve the image of the industry.
- Corporate commitment to improving workforce skills and professionalism increases employee loyalty and motivation while reducing absenteeism and turnover.
- Construction and maintenance users, pipeline operators, and regulatory bodies do not tolerate contractors with unsafe, unskilled workers and hold employers liable for failing to train their employees.
- Corporate commitment to training clearly demonstrates a commitment to quality management, providing a critical competitive edge.
- A professional, well-trained workforce increases overall client satisfaction, thereby increasing the potential for repeat business.

- Well-trained workers are more capable of identifying potential problems and making innovative, cost-reducing solutions.
- Contractors who train have the competitive advantage.
- NCCER's standardized training provides an industry-wide standard of recognition, career advancement opportunities, and a personal sense of accomplishment, professionalism, and pride for workers.

**The bottom-line results of the standardized training process are increased productivity, reduced accidents, and, in turn, more cost-effective construction and maintenance operations.**

## 3.0.0 AUTOMATED NATIONAL REGISTRY (ANR)

The ANR is a national database maintained by NCCER. It lists the names of the individuals who have successfully completed any NCCER standardized training program conducted by an accredited organization. The ANR records training completions and issues appropriate credentials for craft/technical training, safety training, management education, and Master Trainer and Instructor training.

The ANR provides electronic submission and tracking of training, managing of instructor lists, and confirmation of training units and records through a web-based system. The ANR is utilized to obtain information for annual reports and allows Sponsor Representatives and end-users to easily access records.

To maintain privacy, it is the policy of the NCCER that no data will be available to anyone other than Accredited Training Sponsors, Accredited Assessment Centers, Instructors, Primary Administrators, Coordinators, trainees, and participants.

#### 4.0.0 EARN COLLEGE CREDIT

The Craft Training for College Credit is a national partnership between NCCER and PIMA Community College to allow students across the U.S. to earn college credit for successful completion of craft training. If local colleges do not award college credit for NCCER training, this is an option that may be pursued.

If a trainee should want to earn a college degree, now or in the future, Pima Community College credits may be applied toward related degree programs. In order for the credit to be awarded, the trainee must

have successfully completed NCCER training modules under an NCCER Accredited Training Sponsor, and the Pima-approved challenge exam for those modules. (Refer to [www.nccer.org](http://www.nccer.org) for program details.)

Accredited Training Sponsors are required to keep original hard copies of module tests (both written and performance) for at least three years. Copies of these module tests must be submitted to Pima when a trainee applies for college credit.

## TERMS AND DEFINITIONS

The following terms are found within this document. Their definitions are provided to ensure consistency of understanding and use.

**Accredited Training and Education Facility (ATEF)** – A high school, college, or university working in partnership with an Accredited Training Sponsor that has successfully completed an approval process for recognition of its training program.

**Accredited Training Sponsor (ATS)** – A fully accredited entity approved by NCCER as having an accredited training program.

**Accredited Training Sponsor (ATS) Designee** – Individual having verifiable industry experience who has successfully completed Modules 1, 6, and 9 of the Instructor Certification Training Program (ICTP) and will provide verifiable oversight of Accredited Training Education Facility/Accredited Training Unit/Training Unit training programs. This individual will conduct yearly audits and retain documentation to ensure compliance.

**Board of Trustees** – The governing body of NCCER.

**Certification** – Recognition of successful completion of training for Master Trainers and Instructors.

**Competency-Based** – An instructional process where the trainee acquires predetermined measurable skills and knowledge at his/her own pace.

**Course Map** – A graphic representation showing the sequence of the NCCER curricula modules to be completed within a level.

**Guest Instructor** – A non-certified individual presenting information contained in the approved training material and consistent with the training objectives, such as a building inspector, material vendor, or OSHA official. Must be in addition to, not replacing, a Certified Instructor.

**Instructor** – Individual certified in accordance with the NCCER Instructor Certification Training Program, and authorized to teach the NCCER Curricula.

**Instructor Certification Training Program (ICTP)** – Training program for individuals interested in teaching the NCCER Curricula and offering the accompanying credentials. This must be taught by an NCCER Master Trainer with current credentials using current ICTP Kits.

**Instructor Resource Center (IRC)** – A password protected, secure website for instructors to access TestGen software, module exams, Performance Profile, and performance tests. ([www.NCCERIRC.com/](http://www.NCCERIRC.com/))

**Intellectual Property** – All NCCER Curricula (modules, levels, end of module written tests and performance tests, Instructor Certification Training Program, and Master Trainer Instructor Certification Training Program) are the copyrighted, intellectual property of NCCER and are exclusively owned by NCCER. Any use of any portion of the NCCER Curricula without the written consent of NCCER is expressly prohibited.

**Level** – A predetermined number of NCCER Curricula modules designed and sequenced to form approximately one year of training and/or a minimum of 144 hours of instruction.

**Master Instructor** – Instructor with a minimum of five years continuous NCCER training experience may obtain certification as a Master Instructor through successful completion of the National Craft Assessment and Certification Program Skills Assessment for their area of expertise. In addition to successful completion of the assessment, the Instructor **must teach and record** an average of five module completions in the Automated National Registry each year for a five year period.

**Master Trainer** – An individual certified in accordance with NCCER's Master Trainer Instructor Certification Training Program and authorized to train Instructors and Performance Evaluators.

**Master Trainer Instructor Certification Training Program (MTICTP)** – Four-day training program provided by NCCER to certify individuals, approved by an Accredited Training Sponsor, to become Master Trainers.

**Module** – The smallest instructional unit in the NCCER Curricula that can be completed and recognized under NCCER's Standardized Training Process. Module completion requires successful completion of both a written test and performance test (when available). NCCER recommends quarterly submissions but, at minimum, annual submissions of Form 200s.

**NCCER Curricula** – A series of competency-based, task-driven training programs developed by NCCER.

**Performance Evaluator** – Individual utilized to evaluate performance only and must meet minimum requirements of an instructor and successfully complete Modules 1 and 9 of the Instructor Certification Training Program. (NCCER recommends that Performance Evaluators also complete Module 6 of the Instructor Certification Training Program if they plan on conducting performance tests for training.)

**Performance Test** – A hands-on demonstration that measures the trainee's ability to perform the skills covered in an NCCER curriculum module.

**Registry Department** – This department performs all the entries, updates, and oversight of all credentialing records.

**Restricted/Specialty Instructor** – Individual who is recognized by an Accredited Training Sponsor as having demonstrated competence in a particular subject and has successfully completed the entire ICTP, except in the case of a Performance Evaluator as described previously. This individual may teach a module or evaluate performance in that subject area.

**Signature** – Handwritten signature required on all forms. **Stamped or copied signature will not be accepted.**

**Sponsor Representative** – NCCER Master Trainer with current credentials. This person is the primary liaison between an Accredited Training Sponsor and NCCER.

**System Generated Number (SGN)** – NCCER uses social security numbers as the initial candidate ID for entry into the ANR. This information is treated as confidential and handled using industry standard privacy and security measures. A System Generated Number may be used in lieu of a social security number for the following reasons:

1) A high school student or a minor (under 18 years old).

**OR**

2) A person residing outside the United States and does not have a social security number.

**Test-Out** – Experienced workers may successfully complete each task module by passing both written test and performance test in accordance with NCCER's policies and procedures. **One attempt will be allowed to test-out per module.**

**Training Completion Packet** – A packet (transcript, completion certificate, wallet card, and recognition letter) will be sent to the Accredited Training Sponsor upon completion of an NCCER curriculum level. The Accredited Training Sponsor then will forward the packet to the trainee according to the Accredited Training Sponsor's procedures.

**Training Program** – Task training, apprenticeship programs, upgrade training, cross-training, multi-skills training, and/or safety and management training.

**Transcript** – Official document which records successful completion of NCCER training.

**Written Test** – A paper/pencil test that evaluates the trainee's content knowledge of an NCCER curriculum module.

The acronyms identified in these definitions are presented to familiarize Accredited Training Sponsors with terminology that may be used within the NCCER network of sponsors. Both the terms and acronyms will be pointed out throughout this document.

## ACCREDITED TRAINING AND EDUCATION FACILITY (ATEF)

### 1.0.0 WHAT IS AN ATEF?

- An ATEF is a secondary school, post-secondary school, vocational school, technical school, college, or university working in partnership with an Accredited Training Sponsor (ATS) that has completed an approval process for recognition of its training program
- The intent of the NCCER is to establish linkage between schools and industry, thereby providing trainees with future employment opportunities
- Please visit the NCCER website for the complete ATEF Guidelines

An ATEF must meet the following requirements:

- Provides training that meets NCCER's Accreditation Guidelines for a training facility
- Has a representative who fully administers the training program

### 2.0.0 The ATEF Process

- Submit completed Form 106 (Application for ATEF) and application fee to the Accreditation Department
- **Complete Form 105 (ATEF Self-Assessment and Sponsor Evaluation Form) and submit it to the Sponsor Rep at ATS to be used as an auditing tool**
- The Sponsor Representative will conduct on-site audits using Form 105 submitted by the applicant **within six months of the submission of Form 106**
- If approved, the Sponsor Representative will complete, sign, date, and fax the last page of Form 105 with their approval to the Accreditation Department
- Completed Form 105 will be kept by Sponsor Representative
- NCCER will send a congratulatory letter and a tacker sign to the ATS
- The ATS will present the tacker sign to the ATEF. Certificates are available upon request.
- The Sponsor Representative or ATS Designee will schedule audits of the ATEF on a yearly basis thereafter

– These audits are to ensure compliance with NCCER's Accreditation Guidelines

- **The ATS will retain all documentation of audits**
- **The NCCER retains the right to audit each program**
- The ATEF **must agree to comply** with periodic audits by the Sponsor Representative, ATS Designee, and NCCER
- The accreditation period is for three years
- The ATEF **must submit the annual report** covering the previous academic year (July 1-June 30) to the Sponsor Representative who will include information in their annual report and submit it to the Sponsor Representative
- Due to challenges in mandated school system procurement policies, NCCER will work with schools to assist them in transitioning to the NCCER Curricula

### 3.0.0 ATEF STATUS APPEAL PROCESS

If an ATS and ATEF are unable to work together, the following are acceptable reasons for a request to break the relationship:

- An ATS's lack of resources to oversee/support the program
- Financially related disputes
- Program quality related issues
- Policy/procedure conflicts

#### 3.1.0 Steps and Process to Appeal Status

1. Submit a letter to NCCER on company letterhead documenting issue(s) with a copy going to the ATS
2. NCCER will verify receipt of copy with ATS
3. The ATS has 30 days to respond to the issue(s) documented in letter
4. The ATS must submit a response to the Accreditation Department on letterhead signed

by Sponsor Representative

5. If the Sponsor Representative does not respond in 30 days, the Accreditation Department may process the ATEF application
  6. If they do respond and an agreement cannot be reached, the Accreditation Department will review the issues and, if warranted, refer the appeal to the ATEF Status Appeals Committee
- This committee will be comprised of the NCCER President, a representative from NCCER's Board of Trustees, the Chairman, and three members from NCCER's Workforce Development Committee
    - The ATEF Status Appeals Committee will render all decisions in a timely manner

At all above sites, the ATS is responsible for ensuring compliance to NCCER's Accreditation Standards and criteria.

### 3.2.0 Facilities and Services

- Provide adequate space and layout to carry out instruction and training with the required training equipment for realistic methods and procedures
- Supply adequate/appropriate materials, tools, and equipment needed to support the class size and instructional content for instructors and trainees
- Ensure that all registering of individuals, training program administration, testing, credentialing, and release/reporting of information be conducted without regard to race, color, religion, national origin, gender, age, veteran status, physical or mental disability, sexual orientation, or any other reason prohibited by local, state, or federal regulations.
- Classrooms should be well maintained and organized to accommodate teaching/learning activities such as lectures, discussions, and lab work
- Have a written policy prohibiting the use, possession, concealment, or sale of drugs, controlled substances, alcohol, and firearms
- Meet all regulatory and ATS safety/health requirements
- Ensure safety for all classroom, lab and field trip activities

- NCCER recommends that the ATS implement an instructor safety audit process
- Ensure all programs use the NCCER Curricula
- Ensure all instructors are certified through NCCER's process and function in accordance with the policies set forth in this document

### 3.4.0 Test Security

- All testing mechanisms (written, web, online) will be kept in a secured, locked location
- Only Master Trainers and Certified Instructors will have access to the tests
- When a test is to be administered, the original will be used to make copies, then placed back in a secured, locked location
- Tests will be administered by the instructor or Instructor Certification Training Program (ITCP) Proctor
- All unused copies of a test will be destroyed immediately
- Tests will be graded and results will be submitted to the Automated National Registry (ANR) (see 3.1.0 in the Introduction Section I for ANR training information)
- All scored module tests (both written and performance) will be kept in a secure physical or electronic location for three years

#### 3.4.1 Instructor Resource Center (IRC)

- Provides improved test security by offering a password protected website for **instructors only**
  - The access code gives instructors access to all levels of the craft and comes with the purchase of an Annotated Instructor Guide
  - Stand-alone access code cards can be obtained for previously purchased Annotated Instructor Guides
  - Only institutions with a Pearson account will be able to order the access code cards
- Provides access to TestGen software, module exams, Performance Profiles, and performance tests
- Provides access to the most recent updates to tests

- Provides instructors the ability to scramble the order of the exam questions and create additional ones, but not eliminate existing NCCER exam questions
- To access the site and get started go to [www.NCCERIRC.com](http://www.NCCERIRC.com)
- For questions, call NCCER Customer Service

### 3.5.0 Program Evaluation

- The ATS must have a **written policy** for a formal **program evaluation** process for **all sites, instructors, trainees, facilities, and curricula**
- The Sponsor Representative/Master Trainer/ATS Designee will conduct and document ongoing, **scheduled audits** to ensure compliance for all sites and retain documentation
- The Master Trainer will monitor training sessions provided by each instructor on a scheduled basis
- The Master Trainer will provide instructor evaluation forms for the trainees to complete
- The Master Trainer will review evaluations from trainees and provide feedback to instructor as needed

### 3.6.0 Record Keeping Requirements

- Submit **annual report, Form 103** covering the academic calendar from **July 1 through June 30 each year** faxed/emailed/postmarked by no later than **August 31**. Failure to complete this process **may result in loss of accreditation** status. Keep a copy for your records
- Send to the Registry Department, or keep on file, a signed **Registration and Release Form** for each Instructor, Performance Evaluator, and trainee
  - Each trainee will be required to sign a **Registration and Release Form** allowing NCCER to verify trainee status with an ATS (if requested)
  - NCCER will not release any training records or credentials without the appropriate release form on file
  - **If forms are to be kept at the ATS**, a signed blanket release statement, on company letterhead, stating all **Registration and Release Forms** have been completed, signed by the Sponsor Representative, and are on file with the ATS must be sent to the Registry Department

- There is a check box on **Form 200 (NCCER Training Report Form)** for the purpose of notifying the Registry Department that a trainee release form is on file with the ATS
- Keep all training-related records confidential and secure
  - A **breach** of confidentiality **may lead to a loss of accreditation**
- Maintain all records in accordance with ATS-specific policies and procedures unless superseded by local, state, or company regulations
- **Original hard copies of ALL records must be kept for at least three years** (can be kept electronically via scanning), **including**:
  - End of module written tests
  - End of module performance tests
  - Registration and Release Forms
  - **Form 300/300A (Change of Accredited Training Sponsor/Assessment Center Information)**

### 3.6.1 Submissions of Module Completions

- Module completion requires successful completion of both written test and performance test
- The ATS must record the completion by:
  - Filling out **Form 200 (Training Report Form)**
  - Having the instructor, the TU/ATU/ATEF Representative, and the Sponsor Representative sign for verification
  - Submitting it to the ANR or Registry Department (see 3.1.0 in the Introduction Section I for ANR training information)
- Any training submitted under an TU/ATU/ATEF that is not registered in the ANR, will have the training location on the official transcript defaulted to the ATS
- Updated transcripts are sent to the Sponsor Representative or as designated by the Sponsor Representative
- Certificates and wallet cards are issued for successful completion of each of the following:
  - All modules in the NCCER Core Curriculum
  - All modules in an NCCER curriculum level
  - All levels in a given NCCER craft/technician curriculum

- Management Education and Safety trainees will be issued recognition of completion of NCCER Curricula levels and/or the entire NCCER Curricula program

### 3.6.2 Social Security Numbers

- NCCER uses social security numbers (SSN) as the initial candidate ID for entry into the ANR
  - This information is treated as confidential and handled using industry standard privacy and security measures
- A **System Generated Number (SGN)** may be used in lieu of a SSN, at no cost, for the following individuals:
  - A high school student or a minor (under 18 years of age) **OR**
  - A person residing outside of the United States who does not have an SSN
- **Before any training begins**, the Sponsor Representative must contact the Registry Department for an SGN for that person
- To ensure no training history is lost, in the event the individual forgets the SGN assigned, the following applies:
  - **The Sponsor Representative will provide the person's month and day of birth** (this information will be associated with the individual's record in the ANR)
  - The number **must be retained** by the ATS and the individual to access any records
  - Once this number is obtained, it **must be used consistently**. An individual should **no longer use his/her social security number**. Only one SGN can be assigned and used
  - **The Registry Department only accepts this number in lieu of an SSN for processing submissions**

Anyone not meeting the criteria stated above may receive an SGN for a **\$10 fee** to cover NCCER's additional administrative expenses, **provided they do not have records in the ANR under their SSN**.

## 4.0.0 OBTAINING CERTIFICATES AND WALLET CARDS

- Organizations that are granted accreditation receive a letter of congratulations and a certificate of accreditation
- The Master Trainer will be entered into the Automated National Registry (ANR) and **receive a certificate and wallet card** after successful completion of the Master Trainer Instructor Certification Training Program (MTICTP)
- The Master Trainer **must submit Form 101 (Registration of Instructor Certification/Performance Evaluator) and Instructor Certification Training Program (ICTP) information sheet** for instructor candidates who successfully complete the ICTP
- Once the Form 101 has been received and processed, **NCCER will issue each instructor a certificate and wallet card**
- Trainees **must successfully complete both the written test and performance test to receive credit for a module**
  - The ATS must record the completion on **Form 200 (NCCER Training Report Form)**, have it signed by the instructor, Training Unit Representative (if applicable) and Sponsor Representative for approval, and submit it to the Registry Department
  - If using the ANR, the Instructor or Master Trainer must submit the completion on **Form 200 (NCCER Training Report Form)** into the ANR, **for the Sponsor Representative to approve and submit** (see 3.1.0 in the Introduction Section I, ANR training information)
- NCCER will enter the completion into the National Registry and send the ATS an updated transcript
- NCCER will issue certificates and a congratulatory letter for each level completed
- Transcripts will be issued as usual with each registry submission

- Trainees receive a transcript for all training modules. Certificate and wallet card are granted when trainee completes Core Curriculum or any subsequent craft level
- **One wallet card** will be issued to the trainee when the **first credential** is obtained and the trainee will be able to track his/her training accomplishments online via the ANR
- **Only** when an individual achieves **certified plus or crane certification** is another card issued of a different color free of charge
- **Replacement Copies**
  - Certificates and records can be requested by the ATS, but a **nominal fee for each individual will be required if:**
    - It is six months after the original credential issue date **OR**
    - Quantities of reprints are requested (regardless of issuance date)
  - Trainees, instructors, and Master Trainers may request replacements copies of their records, certificates, and/or wallet cards by submitting a signed, written request form that includes a copy of the individual's photo identification and the fee
  - Contact the Registry Department for issuance procedures and questions
- **SSN corrections** can be handled through the ATS or an individual can submit a written, signed request including a photocopy of their social security card

#### 4.1.0 Recognition Chart

The chart below illustrates the forms of recognition that are provided to individuals and entities participating in NCCER programs.

#### 5.0.0 BEST PRACTICES

NCCER has noted some of the common practices of the most successful programs. These programs typically have:

- Full service training programs that also offer assessment options
- For schools, programs have some linkage or direct tie to the construction industry so the trainees stand a better chance of garnering a career in the industry
- A clear written policy that addresses the proper disposition of grievances
- A written policy that complies with various regulations, including federal regulations such as ADA and EEO
- A formalized budget policy that addresses the overall training operations and the various crafts and departments involved
  - The budget should be available for review should the program be selected for accreditation audit
- A written substance abuse policy
- A written test security policy

	Certificate of Recognition	NCCER Transcript	Wallet Card
Accredited Training Sponsor	X		
Accredited Training Sponsor (ATS) Designee	X		X
Accredited Training Unit (ATU)	X		
Accredited Training Education Facility (ATEF)	X		
Master Trainer	X		X
Instructor/Performance Evaluator	X		X
Trainee	X	X	X
ICTP Proctor	X		X
Master Craft/Technician Instructor	X		X

- A written policy containing procedures for re-testing upon failure of written tests and performance tests
- A written safety policy distributed among instructors and trainees addressing safety in the classroom and in labs
- Safety training for all individuals associated with the program (Master Trainers, Instructors, and trainees)
- An instructor handbook for each instructor to include the classroom expectations, conduct, and required administrative duties
- A trainee handbook for each trainee which includes expectations, conduct, and required duties
- A continuing education plan in place for instructors
- On-going and current first aid training for instructors
- Written procedures and directions to be followed when providing first aid during an emergency medical situation
- A sufficient supply of materials such as, but not limited to, equipment, work area, seating, furnishings, books, audiovisual, whiteboards, etc.
- Other materials may be used to **augment, not replace** NCCER Curricula.
- Determination on whether a Master Trainer will be needed on staff at their Training Units, Accredited Training Units, and Accredited Training Education Facilities
- Training system in which trainees are not instructed and evaluated by the same person

## 6.0.0 INSTRUCTOR ELIGIBILITY AND CERTIFICATION PROCESS

### 6.1.0 Available NCCER Instructor Certifications

The recognized categories of NCCER-Certified Trainers and Instructors are as follows:

- Master Trainer
- Instructor
- Restricted/Specialty Instructor
- Performance Evaluator
- Specialty Instructor/Technician
- Safety Specialty Instructor

- Instructor Certification Training Program (ICTP) Proctor
- Master Craft/Technician Instructor

### 6.2.0 Master Trainer

Who is qualified to attend this training and become a Master Trainer? A Master Trainer applicant must possess **at least one** of the following:

- Two years experience as a trainer, instructor, or educator **OR**
- An Associate's Degree or higher in education, a construction-related field, industrial arts, engineering, chemistry, or similar field from an accredited post-secondary institution **OR**
- A minimum of two years experience at a supervisory level or higher in the construction or maintenance industry

### 6.2.1 Master Trainer Certification Process

- In order for a Master Trainer to be registered with NCCER, the applicant must be approved by an ATS
- Master Trainers must be trained and certified directly by NCCER through successful completion of the Master Trainer Instructor Certification Training Program (MTICTP)
- Once certified, Master Trainers may then conduct the Instructor Certification Training Program (ICTP) to certify instructors

Master Trainers must have a current Revision Kit and use current ICTP Kits to train instructors

- NCCER will schedule training sessions for Master Trainers on a regular basis in locations throughout the country. Notice of these sessions will be publicized on the NCCER website
- Specially scheduled sessions for Master Trainers may be requested by contacting the NCCER Registration and Fulfillment Coordinator
- Upon completion of the training session, the NCCER Trainer of Master Trainers will provide the Registry Department with the attendee's pass/fail status
- NCCER will enter the successful attendee's names in the Automated National Registry (ANR) and will award a certificate of successful completion to the attendee

### 6.2.2 Retaining Master Trainer Certification

The Master Trainer must comply with **both** of the following:

- Be endorsed or employed by an ATS AND
- Teach /co-teach the ICTP at **least once every three years and submit completed, signed off Form 101 and ICTP Information Sheet to the Registry Department OR**
- Re-attend the MTICTP

Master Trainer candidates may **NOT** become certified by testing out.

### 6.3.0 Certified Instructors

Who is qualified to provide instruction to the trainees? An instructor must possess **at least one** of the following:

- Experience at a **minimum** journey or technician level in their area of expertise **OR**
- A minimum of three years experience as a certified teacher in a vocational/technical construction or maintenance-related training program
- A Master Trainer may also serve as an instructor if they meet the above criteria and submit **Form 101 and ICTP Information Sheet**

#### 6.3.1 Acceptable Documentation

- A diploma from an acceptable secondary or post-secondary institution in the field(s) to be taught/evaluated **OR**
- A resumé review submitted by the candidate and verified by documentation **OR**
- Documented evidence of successful completion of the National Craft Assessment and Certification Program (NCACP) assessment in the appropriate field(s) **OR**
- A license granted by a state in the field(s) to be taught/evaluated **OR**
- Relevant Certification by a State Department of Education

#### 6.3.2 Instructor Certification Process

- The Sponsor Representative will evaluate the qualifications of Instructor/Performance Evaluator candidates prior to their participation in the Instructor Certification Training Program (ICTP)

- The Sponsor Representative will retain the documentation to support the qualifications for all Instructors/Performance Evaluators, and provide it when requested by NCCER
- Instructors must successfully complete the NCCER ICTP conducted by a Master Trainer with **current credentials** using **current ICTP Kits**
- Upon successful completion, the Master Trainer will provide the ATS with **completed Form 101 (Registration of Instructor Certification) and the ICTP information sheet**
- The Sponsor Representative must approve and forward copies of all forms to the Registry Department and
  - Retain the Registration and Release forms completed by the instructors and all ICTP tests
  - Ensure that all instructors are trained by an NCCER-certified Master Trainer and are certified by NCCER **prior to beginning training**

#### 6.3.3 Instructors Certified for Multiple Crafts

- The Sponsor Representative must submit a written letter on ATS letterhead along with the **Form 101 (Registration of Instructor Certification/Performance Evaluators)**, stating the instructor's name listed on the Form 101 is journeyman-level qualified to teach all of the NCCER Curricula titles listed on the form **OR**
- The instructor has a minimum of three years experience as a certified teacher in each craft area
- The certificate of successful completion and related documents will be forwarded to the sponsoring entity and will be provided to the instructor in accordance with the ATS's policies

#### 6.3.4 Retaining Instructor Certification

The instructor must:

- Be endorsed/employed by an ATS AND
- Teach **at least one** module for an ATS every two years and submit **completed, signed off Form 200 (NCCER Training Report Form)** to Sponsor Representative for approval/submission to the Automated National Registry (ANR) **OR**
- Re-attend the ICTP

### 6.3.5 *Certifying Expired Instructors*

The instructor must have:

- Previously taught the NCCER Curricula in compliance with NCCER's policies and procedures and have successfully submitted the completion of training to the ANR **AND**
- Successfully completed the abbreviated ICTP (Modules 1, 6, 9, and 10) **AND**
- Successfully completed **all written tests** in NCCER's ICTP, provided the ATS approves the request to test-out

### 6.3.6 *Testing-Out for Instructor Certification*

NCCER strongly urges an ATS not to allow testing-out for Instructor Certification. However, instructor candidates may test-out if both of the following conditions have been met:

- The ATS approves the request to test-out **AND**
- The instructor candidate has a minimum of three years experience as a certified teacher in a vocational/technical training program in the craft area certification is being sought

If the above two conditions are met, the instructor candidate may test-out by performing **both of the following**:

- Successfully complete the abbreviated ICTP (Modules 1, 6, 9, and 10) **AND**
- Successfully complete **all ICTP written tests**

**If a candidate fails any written test or performance test, he/she must take the entire NCCER ICTP.**

### 6.4.0 *Replacing an Instructor*

This policy is intended for replacing an instructor, not for initial certification of the instructor.

- This is for emergency situations (i.e., an instructor leaves abruptly, takes ill, or is involved in an accident). In such an event, a non-certified instructor may be utilized if:
  - The instructor and ATS are actively pursuing certification status **AND**
  - The non-certified instructor successfully completes the ICTP and is certified within 90 days of the date of the substitution

- Training completions may **NOT** be submitted to the ANR until the instructor successfully completes the ICTP
- Any exception to the preceding standards and criteria must be approved in writing by NCCER

### 6.5.0 *Restricted/Specialty Instructor/Technician*

- An ATS is allowed to use individuals who satisfy specific training needs as Instructors or Performance Evaluators on a restricted basis
- The ATS must report to NCCER on Form 101 (**Registration of Instructor Certification/Performance Evaluator**) and the **ICTP Information Sheet** the specific area(s) in which the restriction applies
  - For example, if an Instructor is to be used to teach only a math module, this must be reported as a restriction
  - If an individual is to be used as a Performance Evaluator only, this must also be reported

### 6.5.1 *Three Categories of Restricted Certification*

- **Performance Evaluator**
  - Utilized to evaluate performance only
  - Must meet minimum requirements of an instructor **AND**
  - Must successfully complete modules 1 and 9 of the ICTP

NCCER recommends that a Performance Evaluator also complete module 6 of the ICTP if he/she plans on conducting performance tests for training only

  - Will be classified in the ANR as a Performance Evaluator
- **Specialty Instructor/Technician**
  - Utilized to instruct specific module(s)
  - Must have demonstrated competence in the subject being taught **AND**
  - Must successfully complete the entire ICTP
  - Will be classified in the ANR as Specialty Instructor/Technician

- **ICTP Proctor (Training)**
  - May administer end of module written tests for the NCCER Curricula
  - Must complete modules 1, 6, and 9 of the ICTP
  - Will be classified in the ANR as ICTP Proctor

### 6.6.0 Master Craft/Technician Instructor Certification

- Master Instructor Certification is NCCER's highest level of recognition for Instructors
- The intent of Master Instructor Certification is to provide additional recognition for NCCER's most dedicated, qualified, and deserving Instructors
- This is an additional certification and **will in no way negatively impact current standing** as an NCCER Certified Instructor

#### 6.6.1 Obtaining the Certification

NCCER Certified Instructors may, on a voluntary basis, obtain this additional recognition. The following requirements must be met by an NCCER Certified Instructor:

- A minimum of five years continuous NCCER training experience
- **Teach and record** an average of five module completions in the ANR each year for a five year period
- Successfully complete the NCACP Skills Assessment for the NCCER curriculum title, where one exists, in which the instructor is currently certified as an instructor in the ANR
  - In the event an assessment does not exist for the NCCER curriculum title in which the instructor is currently certified, all other Master Instructor Certification requirements **must be met**
  - The Sponsor Representative can confirm assessment completion and Instructor Certification using ANR Quick Check
- For questions regarding the NCCER Curricula titles for Master Craft/Technician Instructor Certification, contact the Registry Department

- In order to obtain Master Craft/Technician Instructor Certification, applicants **MUST** submit **Form 101** to their Sponsor Representative for signature
- The Sponsor Representative will submit the **Form 101** to the Registry Department for verification and certification

### 6.7.0 Exceptions

Guest instructors can be utilized as long as all of the following are met:

- The Instructor or Master Trainer is in attendance
- The information being presented is contained in the approved training materials
- The information is consistent with the training objectives
- The NCCER-certified instructor and Sponsor Representative must complete Form 200, sign off, and submit to Registry Department or submit through ANR

**Using a guest instructor does not dismiss the Certified Instructor's responsibility for the quality and integrity of instruction.**

**Only First Aid/CPR Instructors** who are affiliated with a national organization may instruct without an instructor being in attendance.

### 6.8.0 Curricula with Additional Instructor Qualifications

Due to the compilation or uniqueness of crafts within certain NCCER curricula, there are additional requirements for those instructors wishing to teach these courses. It is the intent of the NCCER to assist an ATS in selecting an instructor that is knowledgeable and qualified to teach these programs. The specific instructor requirements can be found in the preface of the corresponding Annotated Instructor Guide. A list of curricula with these additional requirements can be found on the NCCER website.

## 7.0.0 STANDARDIZED TRAINING THROUGH NCCER

### 7.1.0 Curriculum/Program Operation

- Must use the NCCER Curricula
  - Instructional unit is the module which consists of:
    - Trainee Guide (TG),
    - Instructor's guide (IG) or Annotated Instructor Guide (AIG)
    - Written test
    - Performance test (if applicable)
  - Each module is assigned a number of hours representing the **suggested** teaching time for that specific module
  - Each module can be taught individually and, therefore, different training objectives can be realized by using specific modules
  - Individual modules/levels may be completed out of sequence
  - NCCER packages groups of modules into **levels of training**
  - Modules grouped by levels satisfy the related classroom training requirements of the **Office of Apprenticeship approved apprenticeship training**
  - Supplemental materials are acceptable as long as they **only augment and do not replace** the NCCER Curricula
  - A course map for each level is included as a graphic representation of the modules needed to complete a level in a given training program
  - The course map will assist trainees in planning what modules need to be taken and lay out the sequence of completion
  - Level One trainees must also complete the *Core Curricula* to receive a Level One Completion Certificate in most crafts
  - Module completion requires successful completion of **both a written test and performance test (if applicable)**
  - Successful completion of every module must be demonstrated by specified results on the following tests:
    - Test # 1 – Achieve 70% or higher on the **closed-book written** test
    - Test # 2 – Successfully complete the module performance test (if applicable) to the satisfaction of the Instructor/Performance Evaluator (this is a **pass/fail** test)
- **The end of module tests cannot be modified**
  - Under certain circumstances, the end of module written test may be read, one-on-one to trainees who have special needs (i.e. trainees in high school programs with IEP documentation)
    - The instructor must work through the Sponsor Representative on these requests
    - A copy of any IEP documentation must be retained by the instructor (at the location the training is being provided) and by the ATS for auditing purposes
    - A copy must be provided to the Sponsor Representative of the deviation from policy
  - Written tests are not to be read aloud in a group setting
  - **No observers are allowed in any testing session**
  - Written tests must be administered by a Certified Instructor, ICTP Proctor, or Master Trainer
  - Performance tests must be administered by a Certified Instructor or Performance Evaluator
  - The ATS **must allow for re-testing** in their training policies and procedures
    - **Written re-tests require a minimum 48 hour waiting period**
    - **Performance re-tests will be given at the discretion and time designated by the Instructor/Performance Evaluator**
  - **Testing Out: Individuals who have gained knowledge and experience may test-out**
    - Testing out is permitted but **both the written and performance tests must be passed**
    - **Only one attempt is allowed to test-out per module**
    - Failure to test out will require the individual to attend instruction for the specific module(s) in question
    - Testing out is not permitted for an individual where training is required as the result of not meeting the cut score on an assessment
  - Only Master Trainers and/or Certified Instructors will have access to NCCER Curricula tests
    - Extra copies of unused tests must be destroyed immediately

- NCCER recommends quarterly submissions, but at a minimum annual submissions, of **Form 200s (NCCER Training Report Form)**
- The trainee may appeal any adverse decision in accordance with the ATS's appeal policy
  - If the appeal cannot be resolved with the ATS, the trainee may submit it to the NCCER Accreditation Department within 60 days from the written notice of the adverse decision
  - A copy of the letter to the Accreditation Department must be given to the Sponsor Rep
  - NCCER must respond to the trainee and the ATS within 60 days of receipt of the appeal
  - The NCCER decision is final with no further appeal possible
- **The ATS must accept all previous training as indicated on the official NCCER transcript**
- The trainees will be recognized upon completion of individual modules and levels in accordance with the information provided in the *Obtaining Certificates and Wallet Cards* section of this document
- Curriculum Levels do expire when revisions to the curriculum have been made
  - Training completed using previous versions of NCCER Curricula modules within a level will be accepted by the ANR for a grace period of up to five years after a revision
  - Training completed after the expiration date will not be accepted
  - Training that is submitted after the expiration date will be accepted as long as the training took place prior to the expiration date.
  - Check the NCCER website to stay informed concerning expiring curricula

## 8.0.0 COMPLAINTS AND APPEALS

If an instructor or trainee has a complaint not addressed in the appeals process, he/she should:

- First discuss it with the person or personnel involved
- **If unresolved, submit, in writing**, a statement describing the nature of the issue to the Sponsor Rep
- The Sponsor Representative will **review** the complaint and **provide a solution within 30 days**
- **If no satisfactory response is reached through the Sponsor Representative, submit a written statement to NCCER Accreditation Department within the next 30 days** (60 days from initial written statement)
- This dated and signed statement **must include** name, address, phone number, cell number, and email address

### 8.1.0 Verification Process

- NCCER will investigate the claim and make a determination to its validity
- If found to be **valid**, NCCER will notify the Sponsor Representative and ask that the corrections be made and documentation for such be provided within a timely manner to verify action has been taken
- NCCER will contact the individual and the ATS with a determination within **60 days of the written notice** to NCCER