THOMAS EDISON STATE COLLEGE

101 West State Street
Trenton, NJ 08608-1176

Office for Assessment of Professional and Workplace Learning

Academic Program Review

of

New Jersey Carpenters Apprentice
Training & Educational Fund
220 South 31st Street
Kenilworth, New Jersey 07033

Review Date:
August 16-17, 2012

Effective Dates:
November 2010 – August 2017

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NEW JERSEY CARPENTERS APPRENTICE TRAINING & EDUCATIONAL FUND
PROFILE

The New Jersey Carpenters Apprentice Training and Educational Fund (NJCATEF) was established November 1, 1969 by the Board of Trustees of the New Jersey Carpenters Fund. The "Fund" is a cooperative effort between the Union (United Brotherhood of Carpenters and Joiners of America) and their respective signatory employers. The training program is registered with the US Department of Labor- Office of Apprenticeship Training and Employer Labor Services.

The New Jersey Carpenters Apprentice Training Program consists of 1000 hours of school/technical training, combined with five years of on the job training. The training program has a self-paced format allowing each individual to determine his or her own progress.

Carpentry is the oldest and most respected trade in the construction industry. Todays commercial carpenter's apprentice is trained to build the bridges and buildings that support America's cities, schools, universities and industrial complexes. We build the forms for the concrete foundation, frame and finish the walls and ceilings and install the fine woodwork and trim. In addition to all areas of the carpentry trade, our training program includes: Scaffolding, Blueprint reading, Welding, Layout with level and transit, industry-relevant Math and Algebra.

Source of Official Student Records: John MacKay, NJ Carpenters Apprentice Training & Educational Fund, Joseph D'Aries Training Center, 221 South 31st Street, Kenilworth, NJ 07033; (908) 241-8866.

For further information about the review, contact: Office for Assessment of Professional and Workplace Learning, *(formerly, Center for Academic Program Reviews)*, Thomas Edison State College, 101 West State Street; Trenton, New Jersey 08608-1176, (609) 633-6271; apr@tesc.edu.

New Jersey Carpenters Apprentice Training & Educational Fund

AUGUST 16-17, 2012

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NEW JERSEY CARPENTERS APPRENTICE TRAINING & EDUCATIONAL FUND
APPRENTICESHIP PROGRAM

Course Grouping for Application of Credits

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Total Credits Recommended at Successful Completion of Apprenticeship Program		**34 LD**	

Key: LD = lower division associate/baccalaureate level

Please note: some courses are listed twice as they have curricular components that apply to multiple credit award academic categories.

SAFETY

For the Following Courses:

1. Tools and Equipment
2. Occupational Safety and Health
3. Ergonomics
4. Welding

The Credit Recommendation is:

In the lower division associate/baccalaureate degree category, 3 credits in Safety.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Course Sheet

Course Title: Tools and Equipment

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 40 Hours

Effective Dates: November 2010 – August 2017

Course Description:
This course teaches the apprentice the proper and safe methods of using hand, power, and powder-actuated tools, as well as the proper personal protective equipment to use in conjunction with these tools.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Safely, properly, and efficiently use, maintain and repair the hand and power tools used in construction.
- Demonstrate proper and safe use of powder-actuated tools.
- Perform tool safety checks and prevent accidents related to improper, unsafe tool use.
- Identify, utilize and understand the importance of proper personal protective equipment.

Methodology: Major topics covered in the course are:

- Basic Hand Tools – Use and Safety (Block 1-B) – 10 hours
- Basic Power Tools – Use and Safety (Block 1-C) – 10 hours
- Powder-Actuated Tools (Block 1-M) – 4 hours
- Power Tool Orientation (Block 8-P) – 16 hours

Methods of instruction include: Lecture and Simulation/Role Play.

Assessment criteria: Exams, Demonstrations, and Instructor/supervisor observation.

Course Sheet

Course Title: Occupational Safety & Health

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 48 hours delivered in 3 parts

Effective Dates: November 2010 – August 2017

Course Description: This course is divided into 3 parts to prepare the apprentice to work safely in the construction industry. The first part teaches about the hazards present in construction, how to recognize them, and the steps to take to rectify a hazardous situation. The second part teaches the apprentice how to recognize a first aid emergency and provide emergency first aid and CPR. The third part teaches the apprentice to work "smart" to prevent repetitive work injuries and cumulative trauma disorder.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Understand the roles the Occupational Safety and Health Act (OSHA) and the 1926 Code of Federal Regulations play on the job.
- Understand workers' rights and responsibilities under OSHA.
- Recognize hazards on the jobsite and take appropriate action.
- Perform emergency first aid and CPR, as well as implement the steps to be taken in an emergency first aid situation.
- Prevent injury to apprentice and fellow workers by recognizing the potential for repetitive work injuries and working effectively to prevent cumulative trauma disorders.

Methodology: This course consists of the following 3 topics:

- OSHA 30 Construction Outreach (Block 8-D) – 32 hours
- Safety and First Aid/CPR (Block 1-A) – 8 hours
- Ergonomics (Block 1-F) – 8 hours

Methods of instruction include: Lecture, Discussion, and Collaborative Learning.

Assessment criteria: Exams, Case-study, Instructor/supervisor observation, and class interaction.

Course Sheet

Course Title: Welding

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours (40 hours-introduction to welding; 40 hours-advanced welding)

Effective Dates: November 2010 – August 2017

Course Description: This course teaches the apprentice the proper, safe techniques of the welding and cutting processes. The introductory half covers welding safety and fundamentals. The second half covers advanced techniques in oxy-acetylene torch and arc welding.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Understand and practice safety related to cutting and burning.
- Understand welding fundamentals and how to use the oxy-acetylene torch.
- Understand the fundamentals of shielded metal arc welding and run a flat bead.
- Weld out of position using the shielded metal arc welding procedure.
- Utilize additional electrodes to develop better welding skills.
- Prepare and weld flat and horizontal with various joints and joint preparations.

Methodology: Major topics covered in the course are:

- Arc welding: basic safety and nomenclature (Block 7-A) - 8 hours
- Cutting and burning (Block 7-B) - 32 hours
- Advanced Welding (Blocks 7-C, D,& E) - 40 hours

Methods of instruction include: Lecture and Laboratory.

Assessment criteria: Exams, Demonstrations, and Instructor/supervisor observation.

Construction Materials

For the following courses:

1. Trade Fundamentals 125: Interior Finish
2. Trade Fundamentals 120: Exterior Finish

The Credit Recommendation is:

In the lower division associate/baccalaureate degree category, 4 credits in Construction Materials.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Course Sheet

Course Title: Trade Fundamentals 125: Interior Finish

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 120 hours (delivered in 5 consecutive 8-hour sessions, for 3 consecutive weeks)

Effective Dates: November 2010 – August 2017

Course Description: This course prepares the apprentice to perform interior finish work such as interior doors and hardware, standing and running trim, interior wall coverings, cabinet and casework installations and all other interior finish related work on the job. To complete the course, apprentices must pass a "Workbook and Reference Test" block.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts to the estimating, layout and application of interior finish applications.
- Identify and explain the proper application of materials used in interior finish applications.
- Identify and demonstrate the safe and proper use of power tools related to interior finish work.
- Identify and utilize the types of fastening systems used for interior finish work.
- Estimate, layout, and cut materials used in interior finish work.
- Demonstrate the proper, safe application of materials used in interior finish work.

Methodology: Major topics covered in the course are:

- Shelving: patented mill and job built (Block 5-C)
- Paneling systems and furring (Block 5-D)
- Standing and running trim (Block 5-E)
- Jambs, casings, and stops (Block 5-F)
- Doors -- swinging (Block 5-G)
- Doors--folding and sliding (Block 5-H)
- Latch and lock sets (Block 5-I)
- Closers, stops, and exit hardware (Block 5-J)
- Plastic laminate edge, top, splash (Block 5-K)
- Architectural Wood Panels (Block 5-L)

- Hardware Cert Prep Class I (Block 5-N)
- Hardware Cert Prep Class II (Block 5-O)

Methods of instruction include: Lecture, Discussion, and Lab.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 120: Exterior Finish

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours (5 consecutive 8-hour sessions for 2 consecutive weeks)

Effective Dates: November 2010 – August 2017

Course Description: This course prepares the apprentice to work on all phases of exterior finish which includes window and exterior door installation, all types and styles of wall coverings, exterior trim, and roof coverings. Apprentices learn how to perform exterior finish related work to be used on the job by performing hands-on tasks in the training center. To complete the course, apprentices must pass a "Workbook and Reference Test" block.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts to the estimating, layout and application of exterior finish applications.
- Identify and explain the proper application of materials used in exterior finish applications.
- Identify and demonstrate the safe and proper use of power tools related to exterior finish work.
- Identify and utilize the types of fastening systems used for exterior finish work.
- Estimate, layout, and cut materials used in exterior finish work.
- Demonstrate the proper, safe application of materials used in exterior finish work.

Methodology: Major topics covered in the course are:

- Wall coverings: wood, metal & vinyl (Block 4-A)
- Projections: all materials soffit, fascia, canopy (Block 4-B)
- Composition roofs (Block 4-C)
- Door and window frames and units (Block 4-D)
- Standing and running exterior members (block 4-E)
- Weather stripping and caulking (Block 4-F)
- Wood Roof Coverings (Block 4-H)
- Metal Roof Standing Seam Metal Shingles (Block 4-I)
- Solar Theory and Practice (Block 4-L)
- LEED Theory Green Construction (Block 4-O)

Methods of instruction include: Lecture, Discussion, and Lab.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Materials Handling

For the following courses:

1. Construction Materials and Methods
2. Materials Handling

The Credit Recommendation is:

In the lower division associate/baccalaureate degree category, 3 credits in Materials Handling.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Course Sheet

Course Title: Construction Materials & Methods

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 40 hours

Effective Dates: November 2010 – August 2017

Course Description: This course teaches proper and safe methods of construction material application and installation. Due to updates in technology and tools in the construction industry, new products and methods of application are continually incorporated into this course.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Identify the materials used in construction and develop a working knowledge of them.

- Understand the characteristics and makeup of the materials used in construction.

- Describe and demonstrate the proper, safe application of the materials used in construction.

Methodology: Major topics covered in the course are:

- Construction materials identification and nomenclature
- Contemporary construction materials vs. traditional materials
- Makeup and characteristics of construction materials
- Proper methods of installation or application of construction materials

Methods of instruction include: Lecture, Discussion, and Simulation/Role Play.

Assessment criteria: Exams, Presentations, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Materials Handling

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 40 hours delivered in 4 parts

Effective Dates: November 2010 – August 2017

Course Description: The four blocks in this course combine to teach the apprentice proper, safe methods of handling construction materials on the job site, and recognizing potential dangers in material handling to prevent accidents. Course blocks include basic material rigging, handling and storage, knots and splicing, heavy timber construction, and fall protection.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Demonstrate safe rigging, handling, and storing of construction materials using the proper hardware according to OSHA regulations.
- Demonstrate the proper tying of knots and splicing to be used in material handling.
- Demonstrate proper, safe rigging and material handling processes involved in heavy timber construction.
- Identify the dangers inherent in rigging and material handling in heavy timber construction and determine load limits.
- Recognize the need for fall protection and accident prevention in accordance with OSHA regulations.
- Inspect fall protection equipment to assure safety.

Methodology: Major topics covered in the course are:

- Basic Material Rigging, Handling and Storage (Block 1-I) – 16 hours
- Knots and Splicing (Block 1-P) – 8 hours
- Heavy Timber Construction (Block 3-F) – 8 hours
- Fall Protection (Block 6L-I) – 8 hours

Methods of instruction include: Lecture, Discussion, and Simulation/Role Play.

Assessment criteria: Exams, Demonstrations, Instructor/supervisor observation, and Projects.

Materials Handling

For the following course:

- Lifts

The Credit Recommendation is:

In the lower division associate/baccalaureate degree category, 2 credits in Materials Handling.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Course Sheet

Course Title: Lifts

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 40 hours delivered in 3 parts

Effective Dates: November 2010 – August 2017

Course Description: Following OSHA regulations and ANSI standards, this course teaches the apprentice to safely operate "Self-Propelled Elevating Work Platforms" (Scissor Lifts) and "Boom-Supported Elevating Work Platforms" (Boom Lifts), as well as Industrial Fork Trucks and Rough Terrain Vehicles in accordance with CFR 1910.178, ANSI standards (B56.1 - 1969) and ASME (B56.6-1992).

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Understand and apply the safety regulations related to aerial lift operation.
- Operate the aerial lift in a proper, safe manner.
- Understand the CFR 1910.178 standard covering power industrial trucks.
- Determine whether conditions are conducive to safe operation of the power industrial truck.
- Operate the power industrial truck in the proper, safe manner.

Methodology:

- Aerial Lifts (Block 8-C) - 16 hours
- Power Industrial Truck Operator (Block 7-N) - 16 hours
- Rough Terrain Vehicles (Block 4-J) – 8 hours

Methods of instruction include: Lecture, Discussion, Laboratory, and Simulation/Role Play.

Assessment criteria: Exams, Demonstrations, and Instructor/supervisor observation.

Construction Methods

For the following courses:

1. Trade Fundamentals 120: Exterior Finish
2. Trade Fundamentals 125: Interior Finish
3. Trade Fundamentals 130: Interior Systems Part 1
4. Trade Fundamentals 230: Interior Systems Part 2
5. Trade Fundamentals 231: Interior Systems/Lathing Part 3
6. Trade Fundamentals 115: Framing
7. Transit, Level, and Laser
8. Trade Fundamentals 110: Concrete Formwork Part 1
9. Trade Fundamentals 210: Concrete Formwork Part **2**

The Credit Recommendations is:

In the lower division associate/baccalaureate degree category, 4 credits in Construction Methods.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Course Sheet

Course Title: Trade Fundamentals 120: Exterior Finish

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours (5 consecutive 8-hour sessions for 2 consecutive weeks)

Effective Dates: November 2010 – August 2017

Course Description: This course prepares the apprentice to work on all phases of exterior finish which includes window and exterior door installation, all types and styles of wall coverings, exterior trim, and roof coverings. Apprentices learn how to perform exterior finish related work to be used on the job by performing hands-on tasks in the training center. To complete the course, apprentices must pass a "Workbook and Reference Test" block.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts to the estimating, layout and application of exterior finish applications.
- Identify and explain the proper application of materials used in exterior finish applications.
- Identify and demonstrate the safe and proper use of power tools related to exterior finish work.
- Identify and utilize the types of fastening systems used for exterior finish work.
- Estimate, layout, and cut materials used in exterior finish work.
- Demonstrate the proper, safe application of materials used in exterior finish work.

Methodology: Major topics covered in the course are:

- Wall coverings: wood, metal & vinyl (Block 4-A)
- Projections: all materials soffit, fascia, canopy (Block 4-B)
- Composition roofs (Block 4-C)
- Door and window frames and units (Block 4-D)
- Standing and running exterior members (block 4-E)
- Weather stripping and caulking (Block 4-F)
- Wood Roof Coverings (Block 4-H)
- Metal Roof Standing Seam Metal Shingles (Block 4-I)
- Solar Theory and Practice (Block 4-L)
- LEED Theory Green Construction (Block 4-O)

Methods of instruction include: Lecture, Discussion, and Lab.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 125: Interior Finish

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 120 hours (5 consecutive 8-hour sessions for 3 consecutive weeks)

Effective Dates: November 2010 – August 2017

Course Description: This course prepares the apprentice to perform interior finish work such as interior doors and hardware, standing and running trim, interior wall coverings, cabinet and casework installations, and all other interior finish-related work on the job. To complete the course, apprentices must pass a "Workbook and Reference Test" block.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts to the estimating, layout and application of interior finish applications.
- Identify and explain the proper application of materials used in interior finish applications.
- Identify and demonstrate the safe and proper use of power tools related to interior finish work.
- Identify and utilize the types of fastening systems used for interior finish work.
- Estimate, layout, and cut materials used in interior finish work.
- Demonstrate the proper, safe application of materials used in interior finish work.

Methodology: Major topics covered in the course are:

- Shelving: patented mill and job built (Block 5-C)
- Paneling systems and furring (Block 5-D)
- Standing and running trim (Block 5-E)
- Jambs, casings, and stops (Block 5-F)
- Doors -- swinging (Block 5-G)
- Doors--folding and sliding (Block 5-H)
- Latch and lock sets (Block 5-I)
- Closers, stops, and exit hardware (Block 5-J)
- Plastic laminate edge, top, splash (Block 5-K)
- Architectural Wood Panels (Block 5-L)
- Hardware Cert Prep Class I (Block 5-N)
- Hardware Cert Prep Class II (Block 5-O)

Methods of instruction include: Lecture, Discussion, and Lab.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 130: Interior Systems Part I

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours (5 consecutive 8-hour sessions for 2 consecutive weeks)

Effective Dates: November 2010 – August 2017

Course Description: This is an introductory course intended to train the apprentice to work in the Interior System skill area which includes layout and erection of metal studs and the installation of drywall on walls, columns and ceilings, chase walls and soffits. Additionally, the apprentice learns to perform layout and erection of traditional and diagonal suspended lay in ceilings.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts to the estimating, layout and application of interior systems materials.

- Demonstrate the proper, safe layout and construction of metal stud walls and the application of drywall.

- Identify and demonstrate the safe and proper use of hand tools and power tools related to metal stud and drywall work.

- Identify the types of fastening systems for metal studs and drywall work.

Methodology: Major topics covered in the course are:

- Framed partitions and curtain walls (Block 6-A)
- Metal jambs and borrowed light frames (Block 6-B)
- Drywall installation wood & metal (Block 6-C)
- Metal Framing: Chase wall, etc. (Block 6-E)
- Suspended lay-in ceilings (Block 6-F)
- Diagonal Ceilings (Block 6-G)

Methods of instruction include: Lecture, Discussion, and Lab.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 230: Interior Systems Part II

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours (5 consecutive 8-hour sessions for 2 consecutive weeks)

Effective Dates: November 2010 – August 2017

Course Description: Part II of the Interior Systems series improves on the skills learned in Part I, training the apprentice to work on the more advanced metal framing, pedestal floor systems, insulation and sound control, shaftwall systems and Firestop.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Identify and explain the proper applications of materials used in advanced complex metal framing, shaftwall systems, pedestal floor, insulation and sound control, Firestop and advanced suspended ceiling acoustical ceiling systems.

- Identify and demonstrate the safe and proper use of hand and power tools related to metal stud and drywall.

- Apply mathematical concepts to estimating, layout and application of metal stud and drywall application.

- Demonstrate the proper, safe layout and construction of metal stud walls, the application of drywall, acoustical ceilings, insulation and sound control and Firestop.

Methodology: Major topics covered in the course are:

- Metal Framing: Light pockets (Block 6-H)
- Pedestal Floors (Block 6-J)
- Insulation and Sound Control (Block 6-K)
- Firestop Certification (Block 6-L)
- Shaft Wall Systems (Block 6-M)
- Basic layout (Block 6-N)
- Radius Walls and Soffits (Block 6-O)

Methods of instruction include: Lecture, Discussion, and Lab.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 231: Interior Systems/Lathing Part III

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 40 hours (5 consecutive 8-hour sessions for 1 week)

Effective Dates: November 2010 – August 2017

Course Description: Part III of the Interior Systems series of classes introduces the apprentice to the proper framing and installation of metal lath and is used in conjunction with Interior Systems I and II. The course offers the apprentice the ability to gain the practical knowledge that is useful in the work of metal lath applications.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Identify and explain the proper applications of materials used in metal framing and lathing applications.
- Identify and demonstrate the safe and proper use of hand and power tools related to cold rolled channel metal stud and lathing.
- Demonstrate the proper, safe layout and construction of cold rolled channel metal stud walls and the application of lath.
- Apply mathematical concepts as they relate to cold rolled channel metal stud and lath application.

Methodology: Major topics covered in the course are:

- Layout and erection of studs and systems (Block 6L-A)
- Application of lath nailed screwed glued (Block 6L-B)
- Application of lath tied and clipped (Block 6L-C)
- Column and pilaster framing (Block 6L-D)
- Beams and soffits (Block 6L-E)
- Trims--stops, beads accessories (Block 6L-F)
- Arches (Block 6L-G)
- Prefab component assembly & installation (Block 6L-H)
- Interior Systems Column Project (Block 6L-J)

Methods of instruction include: Lecture, Discussion, and Lab.

Assessment criteria: Exams, Demonstrations, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 115: Framing

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 120 hours (5 consecutive 8-hour sessions for 3 consecutive weeks)

Effective Dates: November 2010 – August 2017

Course Description: This course teaches the apprentice about wood and heavy gauge metal framing processes including application of mathematical concepts, related materials and tools, proper construction procedures, and personal and job-related safety. To complete the course, apprentices must pass a "Workbook and Reference Test" block.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply related mathematical concepts to framing processes.
- Select and use the appropriate materials and tools for framing wood and metal.
- Apply the proper construction procedures to wood framing.
- Apply proper construction procedures to heavy gauge metal framing.

Methodology: Major topics covered in the course are:

- Frame and trussed gable roofs (Block 3-A)
- Hipped and intersecting roofs (Block 3-B)
- Canopies and overhangs (Block 3-C)
- Decking and sheathing (Block 3-D)
- Commercial framing and storefronts (Block 3-E)
- Heavy timber and glue laminate construction and hardware (Block 3-F)
- Beams, sills, and joists (Block 3-G)
- Residential framing layout (Block 3-H)
- Residential plating and detail (Block 3-I)
- Residential wall framing (Block 3-J)
- Stairs (Block 3-K)
- Winder stair layout and assembly (Block 3-M)
- Framing and installation of door (Block 3-N)

Methods of instruction include: Lecture, Discussion, and Lab.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Transit, Level and Laser

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours (delivered in 3 parts)

Effective Dates: November 2010 – August 2017

Course Description: This course teaches the apprentice the function, operation and proper use of the transit, level and laser. Apprentices learn how to develop layout and leveling techniques so they can become competent in the use of auto level, digital transit and self-leveling lasers. The course is broken into three parts which must be taken in sequential order.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Set up the transit, builder's level and laser properly and accurately, including proper set-up over a point and turn angles.
- Understand and read the Vernier scale.
- Transfer elevations from point to point.
- Properly employ the use of the laser level based upon an understanding of its advantages and limitations.
- Understand the OSHA regulations that cover a low power laser.

Methodology: Major topics covered in the course are:

- Transit, Level, and Laser Part I (Block 1-H) – 32 hours
- Laser Use and Safety Subpart I (Block 7-P) – 8 hours
- Transit, Level, and Laser Part II (Block 8-E) – 40 hours

Methods of instruction include: Lecture, Discussion, Laboratory, and Simulation/Role Play.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 110: Concrete Formwork Part I

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours (10 consecutive 8-hour sessions over 2 work weeks)

Effective Dates: November 2010 – August 2017

Course Description: This course introduces the apprentice to the basic skills and procedures used in concrete formwork including building layout, wall footing forms, column and pier footing forms and pile caps, wall forms, and gang forms.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts related to concrete formwork.
- Practice the proper selection of hardware based on the formwork to be constructed.
- Consider the effects of lateral pressure on formwork and construct the forms based on good procedure and evident pressure.
- Apply concrete forming principles to footing, wall, and pilaster forming using traditional wood forms.
- Apply concrete forming principles to footing, wall, and pilaster forming using patented hardware and patented forming systems.

Methodology: Major topics covered in the course are:

- Building layout (Block 2-A)
- Wall footing forms (Block 2-B)
- Column and pier footing forms and pile caps (Block 2-C)
- Wall forms (Block 2-D)
- Gang forms (Block 2-E)

Methods of instruction include: Lecture, Discussion, and Simulation/Role Play.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 210: Concrete Formwork Part II

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours

Effective Dates: November 2010 – August 2017

Course Description: This course further develops the apprentice's skills and knowledge of procedures used in more advanced concrete formwork including column forms and gang-formed columns, beam forms and girder, slab and deck forms, stair forms, deck and edge forms for bridges, form hardware, slip forms, layout, and insulated concrete, Styrofoam, forms.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts related to concrete formwork.
- Demonstrate safety procedures and practices related to concrete formwork.
- Understand and use concrete formwork nomenclature.
- Identify and use concrete formwork hardware, selecting the proper hardware based on the formwork to be constructed.
- Apply concrete forming principles to column forms and gang-formed columns, beam forms and girder, slab and deck forms, stair forms, deck and edge forms for bridges, form hardware, slip forms, and insulated concrete forms/Styrofoam using traditional forming.
- Apply concrete forming principles to column forms and gang-formed columns, beam forms and girder, slab and deck forms, stair forms, deck and edge forms for bridges, form hardware, slip forms, and insulated concrete forms/Styrofoam using patented form systems.

Methodology: Major topics covered in the course are:

- Column forms and gang-formed columns (Block 2-G)
- Beam forms and girder (Block 2-H)
- Slab and deck forms (Block 2-I)
- Stair forms (Block 2-J)
- Deck and edge forms for bridges (Block 2-K)
- Form hardware (Block 2-L)

- Basic & Advanced Layout (Block 2-N)
- Insulated concrete forms/Styrofoam (Block 2-P)

Methods of instruction include: Lecture, Discussion, and Simulation/Role Play.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Temporary Structures

For the following courses:

1. Scaffold
2. Trade Fundamentals 110: Concrete Formwork Part 1
3. Trade Fundamentals 210: Concrete Formwork Part 2

The Credit Recommendation is:

In the lower division associate/baccalaureate degree category, 3 credits in Temporary Structures.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Course Sheet

Course Title: Scaffold

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 40 hours (delivered in 3 parts)

Effective Dates: November 2010 – August 2017

Course Description: Developed by the United Brotherhood of Carpenters in partnership with OSHA and the DOE, this three-part course addresses OSHA safety regulations for scaffolds, scaffolding instruction, and the specific procedures for erecting Frame Scaffolds, Mobile Tower Scaffold, Tube and Clamp and Systems Scaffolds.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Demonstrate understanding of the OSHA regulations regarding scaffolds and scaffold erection.
- Determine the leg load of a scaffold.
- Using blue prints, properly and safely erect and dismantle a regulation scaffold.

Methodology: Major topics covered in the course are:

- Basic Scaffolding Safety and Erection (Block 1-J)- 8 hours
- Systems Scaffold (Block 1-N) -16 hours
- Tube Coupler Scaffold (Block 1-O) - 16 hours

Methods of instruction include: Lecture, Discussion, and Simulation/Role Play.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 110: Concrete Formwork Part I

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours (10 consecutive 8-hour sessions over 2 work weeks)

Effective Dates: November 2010 – August 2017

Course Description: This course introduces the apprentice to the basic skills and procedures used in concrete formwork including building layout, wall footing forms, column and pier footing forms and pile caps, wall forms, and gang forms.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts related to concrete formwork.
- Practice the proper selection of hardware based on the formwork to be constructed.
- Consider the effects of lateral pressure on formwork and construct the forms based on good procedure and evident pressure.
- Apply concrete forming principles to footing, wall, and pilaster forming using traditional wood forms.
- Apply concrete forming principles to footing, wall, and pilaster forming using patented hardware and patented forming systems.

Methodology: Major topics covered in the course are:

- Building layout (Block 2-A)
- Wall footing forms (Block 2-B)
- Column and pier footing forms and pile caps (Block 2-C)
- Wall forms (Block 2-D)
- Gang forms (Block 2-E)

Methods of instruction include: Lecture, Discussion, and Simulation/Role Play.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Course Sheet

Course Title: Trade Fundamentals 210: Concrete Formwork Part II

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 80 hours

Effective Dates: November 2010 – August 2017

Course Description: This course further develops the apprentice's skills and knowledge of procedures used in more advanced concrete formwork including column forms and gang-formed columns, beam forms and girder, slab and deck forms, stair forms, deck and edge forms for bridges, form hardware, slip forms, layout, and insulated concrete, Styrofoam, forms.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Apply the mathematical concepts related to concrete formwork.
- Demonstrate safety procedures and practices related to concrete formwork.
- Understand and use concrete formwork nomenclature.
- Identify and use concrete formwork hardware, selecting the proper hardware based on the formwork to be constructed.
- Apply concrete forming principles to column forms and gang-formed columns, beam forms and girder, slab and deck forms, stair forms, deck and edge forms for bridges, form hardware, slip forms, and insulated concrete forms/Styrofoam using traditional forming.
- Apply concrete forming principles to column forms and gang-formed columns, beam forms and girder, slab and deck forms, stair forms, deck and edge forms for bridges, form hardware, slip forms, and insulated concrete forms/Styrofoam using patented form systems.

Methodology: Major topics covered in the course are:

- Column forms and gang-formed columns (Block 2-G)
- Beam forms and girder (Block 2-H)
- Slab and deck forms (Block 2-I)
- Stair forms (Block 2-J)
- Deck and edge forms for bridges (Block 2-K)
- Form hardware (Block 2-L)

- Basic & Advanced Layout (Block 2-N)
- Insulated concrete forms/Styrofoam (Block 2-P)

Methods of instruction include: Lecture, Discussion, and Simulation/Role Play.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Graphics

For the following course:

- Blue Print Reading

The Credit Recommendation is:

In the lower division associate/baccalaureate level, 3 credits in Graphics.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Course Sheet

Course Title: Blueprint Reading

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 40 hours (delivered in two parts)

Effective Dates: November 2010 – August 2017

Course Description: This course is delivered in two parts and must be taken sequentially. Part I covers basic blueprint reading to familiarize the apprentice with blueprints used in construction. Part II expands on and reinforces the apprentice's knowledge of blueprints gained in Part I and adds the concepts of quantitative takeoff and estimating.

Learning Outcomes: Upon successful completion of this course, the apprentice will be able to:

- Understand the nomenclature of blueprints.
- Read and interpret lines, symbols and details.
- Understand sketching and drawing principles and practices.
- Perform quantitative take off and estimating.
- Gain sufficient competence in reading and interpreting blueprints to transfer the interpretation over to a construction project.

Methodology: Major topics covered in the course are:

- Blueprint nomenclature
- Reading and interpreting blueprints
- Sketching and drawing
- Quantitative take off and estimating

Methods of instruction include: Lecture and Simulation/Role Play.

Assessment criteria: Exams, Instructor/supervisor observation, and Projects.

Fieldwork

For the following course:

- On-the-Job Learning

The Credit Recommendation is:
In the lower division associate/baccalaureate degree category, 6 credits in Fieldwork.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Course Sheet

Course Title: On-the-Job Learning (OJL)

Location: Kenilworth, NJ and Mullica Township, NJ

Length: 6000 Total Hours (1200 hours per year for 5 years)

Effective Dates: November 2010 – August 2017

Course Description: Through journeymen carpenter observation, demonstration, and oversight, this course enables the apprentice to apply and further develop the basic and specific skills, procedures and techniques learned through classroom-based training directly on construction job sites. During OJL, apprentices develop and refine their skills in all phases of the carpentry trade including, but not limited to, concrete formwork, wood and metal framing, interior systems, interior and exterior finish, and welding. OJL is evaluated and documented by the job site supervisor or foreman.

Learning Outcomes: Upon successful completion of On-the-Job Learning, the apprentice will be able to:

- Become orientated to varied work settings within the construction trade.
- Demonstrate understanding and competence in technical skills and procedures related to the carpentry trade.
- Apply sound judgment and critical thinking skills in a real-world construction environment.
- Manage time effectively on the job.
- Work effectively and efficiently in teams on the job.
- Increase the level of applied skill and degree of job responsibility with each successive year of OJL.

Methodology: This course parallels the related classroom-based training covered in the 5-year apprenticeship: trade fundamental training, concrete formwork, wood and metal framing, interior systems, interior and exterior finish, welding and other tasks which are covered under the jurisdiction of the Northeast Regional Council of Carpenters.

Methods of instruction include: Internship/Practicum and Field Experience.

Assessment criteria: Field Experience.

Bill of Materials/Cost Estimating
(Present throughout apprenticeship curriculum)

The review team's assessment of the apprenticeship program revealed college level learning in Bill of Materials/Cost Estimating was integrated throughout the curriculum.

For coverage of these areas in the apprenticeship program--

The Credit Recommendation is:

In the lower division associate/baccalaureate degree category, 3 credits in Bill of Materials/Cost Estimating.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

Construction Codes
(Present throughout apprenticeship curriculum)

The review team's assessment of the apprenticeship program revealed college level learning in Construction Codes was integrated throughout the curriculum.

For coverage of this subject area in the apprenticeship program--

The Credit Recommendation is:

In the lower division associate/baccalaureate degree category, 3 credits in Construction Codes.

Credit Rationale: There is sufficient academic rigor and technical ability in these apprenticeship courses to warrant award of college credits. Credit recommendations reflect the types and levels of applicable courses, which are comparable to those offered at other US Colleges.

REVIEW SUMMARY

General Academic Recommendations:
Develop courses in:

- Computer Literacy - credits could be gained from development of computer literacy curriculum
- Develop a separate course in CAD for 3 credits
- History of Labor Unions – credits could be gained from development of history of labor unions curriculum

Commendations:
This apprenticeship program should be commended for the overall dedication to craft and the quality of education for the carpenters' apprenticeship participants. In addition to the overall thoroughness of the curriculum, throughout the apprenticeship program there is evidence of emphasis on sustainability issues and green construction. There is also considerable evidence of best practices in terms of creating a learning environment and commitment to quality instructors and administration of the program.