Nichols Career Center
BUILDING TRADES
Course Syllabus

Revised 5/2018

Instructors: Bryan Wolf Building Trades
Conference Times: 10:55-11:55 am or after 3:00 pm
Nichols Career Center Number: 573-659-3100
Building Trades Office Number 573-659-3118, 573-353-6069 (Cell)
Email: bryan.wolf@jcschools.us
Website: www.nicholscareercenter.org

COURSE DESCRIPTION: **Grades: 11-12**
Credits: 4.0

Building Trades – This course is designed for students wishing to enter one of the building trades such as carpentry, sheet rocking, formwork, concrete work, painting, or other related trades. The main project is the construction of a five or six room residence built by the students in as much as building codes permit. Students have the opportunity to receive a 10-hour OSHA card. Dual credit is available with State Fair Community College for juniors and seniors. Articulation agreement for seniors only with the Carpenter's Apprenticeship Union at 55%-65% level of journeyman wages, depending on the student's test score.

EMBEDDED MATH: **Grades: 11-12** **Credit: 0.5**
This course presents informational methods of contextual mathematical instruction directly related to Auto Collision. Students will review pre-existing concepts and learn new concepts that are specific to the automotive industry. Relative mathematics will prepare students for higher education or provide them with the knowledge necessary to enter directly into the trade. Students will complete various assignments but not limited to projects and problem solving activities. Additionally, students will practice Accuplacer-prep objectives.

EMBEDDED COMMUNICATION ARTS: **Grades: 11-12** **Credit: 0.5**
The Nichols Career Center Technical English program will capitalize on student interest in collision technology and practical experience in the collision shop. Students will be encouraged to choose topics related to collision technology and the workplace when conducting research and presenting information. (Please see additional information in the Technical English syllabus)

PROGRAM GOAL:
All students will have a positive placement. Each student will complete the program prepared to advance to an entry-level building trades position, enlist with the military, or attend a college or technical school.

TEXTBOOKS, RESOURCE MATERIALS, MEDIA SUPPORT, ETC:
Textbooks and workbooks: Modern Carpentry, Goodheart-Wilcox Company, Inc., Copyright
Textbook/workbook: Carpentry Fourth Edition, 2004 by American Technical Publishers, Inc.

I. Model Carpentry Instruction Program
United Brotherhood of Carpenters Apprenticeship and Training
Fund of North America

II. Carpentry Fourth Edition
American Technical Publishers, Inc.
Homewood Illinois

III. Core Curriculum
Trainee Guide Fourth Edition
Copyright 2009 Pearson

IV. Carpentry Level 1
Fifth Edition
Copyright 2013 Pearson

V. Carpentry & Building Construction
Glencoe/ McGraw Hill

VI. Carpentry Fourth Edition
ATP Publication Leonard Koel

VII. Home & Landscape Design Software

VIII. DeWalt Building Code Reference 2009 IRC

IX. RS Means Estimating Software

Videos:

A. Making Mortise and Tenon Joints
With Frank Klausz
Tauton Press 1986

B. Tools of the Trade:
Inside the Carpenters Toolbox
Shopware 2007

H. Framing Walls
With Larry Haun
Tauton Press 2003

I. Framing Floor & Stairs
With Larry Haun
Tauton Press 2003

C. Essential Woodworking Techniques
Woodworkers Journal

D. Mastering Your Table Saw
With Kelly Mehler
Tauton Press 2003

E. Foundations
Shopware 2012

F. Laying Hardwood Floors
With Don Bollinger
Tauton Press 2003

G. Installing Trim
With Craig Savage
Tauton Press 2003

J. Framing Walls
With Larry Haun
Tauton Press 2003

K. Framing Roofs
With Larry Haun
Tauton Press 2003

L. The Gateway Arch
Civil pictures 2006

M. Incorporating Leadership Skills
MODESE 2005

Guest Speakers:

A. Robert Simmons Safety & Health Services
Builders Association of America
Jefferson City, MO

B. Mike Hooper Safety & Sales
Hilti
Hilti Center 1150 Camridge Circle Drive
Kansas City, KS

C. Matt Hurley
Carpenters Union Representative

D. Milwaukee Safety & Territory Representative
St. Louis, MO

E. Jefferson City Code Enforcement
Building Code Inspector
City of Jefferson City, MO
320 E. McCarty

GRADING SYSTEM:
Categories:

- 10% Tech Math
- 5% Tech English
- 10% Formative Assessment (Practicing Standards and Job Readiness)
- 65% Summative Assessment – (Quizzes, Tests, Projects)
- 10% Term Exam

Grade reports will be sent to students and parent(s)/guardian/(s) of secondary students at the end of each nine-week period. The following grading scale is used.

93-100 A (Excellent Work)	80-82 B- (Superior Work)	67-69 D+ (Inferior Work)
90-92 A- (Excellent Work)	77-79 C+ (Average Work)	63-66 D (Inferior Work)
87-89 B+ (Superior Work)	73-76 C (Average Work)	60-62 D- (Inferior Work)
83-86 B (Superior Work)	70-72 C- (Average Work)	0-59 F (Failure)

IN …..….Incomplete work, no credit given until requirements are completed, which automatically becomes an "F" at the end of a semester, unless arrangements are made with the office.

W ……Withdrawn, passing work being done in a course dropped either by withdrawal from school or by permission of the director.

WF ……..Withdrawn failing, failing work being done at the time of withdrawal OR course is dropped after the deadline for schedule changes.

RETURN POLICY FOR SECOND SEMESTER:
Students who are performing below average, or who are failing the semester are subject to removal from the program at semester. A student/parent conference will be held prior to the end of the semester with the appropriate individuals present and alternatives will be discussed.

CLASSROOM/LABORATORY EXPECTATIONS/GUIDELINES (Building Trades):

- All students will be instructed and tested on proper safety procedures.
- Each student is required to purchase safety glasses and a 3" notebook for this class and 20 insertable tabs.
- Each student will come to class prepared to work and have all supplies at his/her desk.
- These supplies are: Text books, 3-ring binder, paper, pencil, tape measure, safety glasses and be dress ready to work in lab area at the beginning of class.
- Cell phones can be kept on their person but not used during class hours except during break.
- Students will follow jewelry, hair, and clothing rules in the lab area and job site.
- No horseplay, cursing, or lack of consideration of others will be allowed.

- All homework is due at the beginning of class unless otherwise stated.
- Students must pass safety tests **100%** before he/she uses shop tools & equipment.
- Ask Permission to use machinery from instructor.
- Report any defective tools, machines, or other equipment to the instructor.
- Never remove guards or safety devices from saws or other equipment.
- Report all accidents to the instructor regardless of nature of severity.
- Operator must turn **OFF** power and make certain the machine has **STOPPED** running before leaving the machine.
- Disconnect the power from the machine before performing maintenance.
- Use correct tool for the job.
- Keep classroom and job sites area floor clean of scraps and litter.
- Clean up any spilled liquids immediately.
- Respect the property of other students.
- Clean the chips from a machine with a brush **NOT** with a rag or bare hands.
- Any **DAMAGE** to the Bus will be paid for by the student/students responsible.
- Always walk in shop or job site, **DO NOT RUN.**
- The stealing of tools will result in the **TERMINATION** from the class.
- Put up tools in it's proper places when finished with them. (Cordless tools in their cases).
- Clean up work area and tools when you are finished or before you are excused.

STUDENT SERVICES:
Student services are available to help students succeed in their classes. Students in technical programs are eligible for extra assistance by asking for help from their teachers or by having their teacher refer them to the Vocational Resource Educator. Career Planning is available to students who are looking for part-time or full-time jobs or need help with writing a resume. In addition, persons knowledgeable about financial aid for post high school training/education are available, as well as persons who can help students assess their vocational strengths and preferences in order to make more information career choices.

STUDENT YOUTH ORGANIZATIONS:
Student organizations are an important aspect of Career & Technical education. Students are encouraged to actively participate in Skills USA, an organization for Career and Technical students.

CERTIFICATION:
Building Trades: CareerSafe's 10-Hour OSHA Construction Industry training program consists of 14 interactive modules discussing various safety tips and procedures one should follow while in the workplace. Each module contains a brief assessment, which must be successfully completed before the student can move on to the next module. Once all modules have been viewed and the corresponding assessments are passed there is a comprehensive final assessment. Hilti Powder-Activated Tool Certificate: Training and safe use of Hilti powder-activated tools. Must pass assessment at a mastery level of 100%. Students also take the Skills Carpentry assessment as their Technical Skills Assessment. They must pass with a 60% or better.

DUAL CREDIT:
Students have the opportunity to receive dual credit through State Fair Community College.

- Building Trades Students - 3 credit hours of Construction Methods I

COURSE OBJECTIVES:

- To ensure that each student has a working knowledge of residential construction.
- To develop safe work habits in the shop as well as at the building site.
- To develop the skills to use the portable and stationary power tools that is used in residential construction.
- To develop good workmanship, improve the ability to read and follow blueprint reading skills.

ESSENTIAL SKILLS (Carpentry Blueprint - SkillsUSA):

1. **Safety**
   - 1.1. Identify common causes of construction accidents.
   - 1.2. Explain the role of OSHA and the 10-hour certification.
   - 1.3. Explain fall protection, ladder, stair, and scaffold procedures and requirements.
   - 1.4. Recognize hazard recognition and risk assessment techniques.
   - 1.5. Identify struck-by hazards and demonstrate safe working procedures and requirements.
   - 1.6. Identify caught-in-between hazards and demonstrate safe working procedures and requirements.
   - 1.7. Define safe work procedures to use around electrical hazards.
   - 1.8. Demonstrate the use and care of appropriate personal protective equipment (PPE).
   - 1.9. Explain the importance of hazard communications (HazCom) and Material Safety Data Sheets (MSDSs).
   - 1.10. Identify other construction elements, welding and cutting hazards, confined spaces, and fires.
2. **Using and maintaining hand tools**
   - 2.1. Recognize and identify some of the basic hand tools and their proper uses in the construction trade.
   - 2.2. Visually inspect hand tools to determine if they are safe to use.
   - 2.3. Safety use hand tools.
   - 2.4. Utilize measurement devices.
3. **Using and maintaining power tools**
   - 3.1. Identify power tools commonly used in the construction trades.
   - 3.2. Use power tools safely.
   - 3.3. Explain how to maintain power tools properly.

4. Read and interpret plans and elevations from blueprints

4.1. Recognize and identify basic construction drawing terms, components, and symbols.

4.2. Relate information on construction drawings to actual locations on the print.

4.3. Recognize different classifications of construction drawings.

4.4. Interpret and use drawing dimensions.

5. Understanding material handling

5.1. Use proper materials-handling techniques.

5.2. Choose appropriate materials-handling equipment for the task.

5.3. Recognize hazards and follow safety procedures required for materials handling.

6. Understand concrete, reinforcing materials, and forms

6.1. Identify the properties and composition of cement and concrete.

6.2. Perform volume estimates for concrete.

6.3. Identify types of concrete reinforcement materials.

6.4. Identify various types of footings and forms.

6.5. Erect, plumb, and brace a simple concrete form with reinforcement.

7. Identify and understand floor, wall, and ceiling systems

7.1. Understand floor systems.

7.1.1. Read and interpret drawings and specifications to determine floor system requirements.

7.1.2. Identify floor and sill framing and support members.

7.1.3. List and recognize different types of floor joists.

7.1.4. List and recognize different types of bridging.

7.1.5. List and recognize different types of flooring materials.

7.1.6. Match selected fasteners used in floor framing to their correct uses.

7.1.7. Estimate the amount of material needed to frame a floor assembly.

7.1.8. Demonstrate the ability to lay out and construct a floor assembly.

7.1.9. Demonstrate the ability to install bridging.

7.1.10. Demonstrate the ability to install a subfloor using butt-joint and tongue and groove installation techniques.

7.2. Understand wall and ceiling systems.

7.2.1. Identify the components of a wall and ceiling layout.

7.2.2. Describe the procedure for laying out, assembling, erecting, and bracing an exterior wall.

7.2.3. Identify the common materials and methods used for installing sheathing on walls.

7.2.4. Identify tools used in the construction of cold formed steel framing.

7.2.5. Describe the correct procedure for laying out, cutting and installing ceiling joists.

8. Understand roof framing

8.1. Understand the terms associated with roof framing.
8.2. Identify the roof framing members used in gable and hip roofs.
8.3. Identify the methods used to calculate the length of the rafter.
8.4. Identify the various types of trusses used in roof framing.
8.5. Demonstrate the usage of a rafter framing square and speed square in laying out a roof.
8.6. Identify various types of sheathing used in roof construction.
8.7. Identify the parts of a common rafter.
8.8. Frame a roof opening.
8.9. Erect a gable roof using trusses.
8.10. Estimate the materials used in framing and sheathing a roof.

9. Understand exterior finishes

9.1. Describe the purpose of wall insulation and flashing.
9.2. Describe the types and styles of siding.
9.3. Describe the types and styles of veneer finishes.

10. Understand drywall installation

10.1. Identify the different types of drywall and their uses.
10.2. Measure, cut and install gypsum board.
10.3. Select fasteners for drywall installation.
10.4. Estimate square footage for materials needed in drywall installation.

11. Understand stair systems

11.1. Identify the types of stairs.
11.2. Identify the various stair parts, including railing.
11.3. Calculate rise and run for stair stringers.
11.4. Layout and cut stringers, risers, and treads.
11.5. Identify the types of material used in stair construction.

12. Understand the installation of windows and doors

12.1. Identify the styles of doors and windows.
12.2. Identify the parts of a window and door.
12.3. Install a pre-hung door,
12.4. Install a pre-hung window.
12.5. Identify the hardware needed for door installation.
12.6. Identify various types of flashings.

13. Math skills

13.1. Use fractions to solve practical problems.
13.2. Use proportions and ratios to solve practical problems.
13.3. Measure angles.
13.4. Find surface area and perimeter of two dimensional objects.
13.5. Apply transformations (rotate or turn, reflect or flip, translate or slide, and dilate or scale) to geometric figures.

13.6. Construct three-dimensional models.
13.7. Apply Pythagorean Theorem.
13.8. Make comparison, predictions, and inferences using graphs and charts.
13.9. Find slope of a line.
13.10. Solve practical problems involving complementary, supplementary and congruent angles.
13.11. Solve problems involving symmetry and transformation.

14. English skills

14.1. Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
14.2. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

COURSE OUTLINE (First Semester – Building Trades :

Week	Topic
1-2	Introduction/Measurements/Basic and Job Site Safety
2-4	Orientation to the Trade/ Hand and Power Tool Safety and Materials Handling
4-6	Building Design, Plans and Specifications/ Builder's Levels and Transits
7-9	Building Site and Layout, Term 1 Exam
2-9	CareerSafe 10-hour Safety Course ● Introduction to OSHA Part 1 ● Introduction to OSHA Part 2 ● Materials Handling, Storage, Use and Disposal ● Hand and Power Tools ● Excavations ● Health Hazards in Construction Assessment
10-12	Types of Foundations and Forming Methods/ Concrete
12	Scaffold Safety and Construction
13-15	Floor and Wall Framing
15-16	Ceiling and Roof Framing
17-18	Roof Finish, Term 2 Exam
10-18	CareerSafe 10-hour Safety Course ● Personal Protective Equipment ● Fall Hazards Part 1 Assessment ● Fall Hazards Part 2 Assessment ● Struck-By Hazards ● Caught-In Between Assessment ● Electrocution Hazards Assessment ● Final Assessment: 10-Hour Construction Industry

COURSE OUTLINE (Second Semester):

Week	Topic
1-2	Exterior Doors
3-4	Exterior Wall Finish
4-9	Interior Wall Finish, Term 3 Exam
10-13	Interior Trim
13-15	Stairway Construction
16-17	Introduction to Welding
18	Job Placement/ Term 3 Exam

Attendance/Make-up Policy
Building Trades I

Regular attendance, coursework, and class participation is critical to the success of a student. As a training facility, the faculty of Nichols Career Center places a great deal of importance on daily attendance, coursework, and class participation. Many of the activities that occur within the programs offered at Nichols cannot be duplicated. To reflect the importance of regular daily attendance and class participation, the following grading procedure becomes effective on the first day of school.

1. Students will be able to "make-up" the class participation grade for absences in the following manner. Within 2 school days from the absence, turn in a paper (one page per block period missed) relevant to the subject being taught on the day of the students absence.

2. The paper must be legible and use correct grammar, spelling, and sentence structure.

3. The cover page should include:
   Name of student
   Class missed and number of blocks
   Date of absence
   Parent/guardian signature and daytime phone number

4. A bibliography page must be included.

5. If the instructor deems the paper unacceptable based on the above conditions, the instructor has the discretion whether to allow the student the opportunity to revise the assignment.

6. School activities are not considered an absence for the student.

7. It is up to the student to seek out the instructor for make-up work. The instructor will not in any way be responsible for making sure the student is making up the work.

8. The paper will be a standard size (8 ½ x 11). The type should be no larger than 12 point. The paper should be double spaced. If the paper is written by hand, each line of the page must be written on.

9. As with all guidelines and procedures, there will be extenuating circumstances concerning make-up work. If the student finds themselves in this position they must have a conference with the instructor.

DRESS CODE
Students are expected to come to class dressed and prepared to work in the lab area at the beginning of class. Required dress is long pants or jeans (with minimal holes), boots, and safety glasses. All clothing must be school appropriate.

DAMAGED TEXTBOOK OR EQUIPMENT
Students will be required to pay for any damages to books or equipment.

FEES
All students will be required to purchase a voucher from Career Safe to obtain a 10-hour OHSA card.

MASTER LIST OF COMPETENCIES: Available upon request.