COLBY COMMUNITY COLLEGE

Syllabus

Course Number/Title: AE 199 Introductory Craft Skills **Year:** Fall 2012

Department: Business & Technology **Credit Hours: 5**

Required Text: NCCER Contren Learning Series
Core Curriculum "Introductory Craft Skills,"
4th Edition
Pearson Education, Inc.
Upper Saddle River, NewJersey 07458

Days/Time: Lecture Online

Instructor: Derek Reilley **Room #:** Basement of T. Hall

Office Hours: 8:00 am to 5:00 pm Monday-Friday **Phone:** 785-460-5431 Office
785-443-3856 Cell

Course Placement: Freshman/Sophomore **Pre-requisite:** None

Email: derek.reilley@colbycc.edu

Rationale: Construction is one of the nation's largest industries, offering excellent opportunities for high earnings, career advancement, and business ownership. People with many different talents and educational backgrounds – skilled craftspersons, managers, supervisors, and superintendents – find job opportunities in construction and related fields

Course Description: The Introductory Craft Skills course includes nine modules for building foundation skills in construction. This Core Curriculum course is the first course students will take to learn the fundamentals to advance to different areas in the industry such as: Solar Photovoltaic Systems Installer, Wind Turbine Maintenance Technician, Alternative Energy, and many more majors in the construction industry.

Course Outline:

1. Chapter 1: Basic Safety
2. Chapter 2: Introduction to Construction Math
3. Chapter 3: Introduction to Hand Tools
4. Chapter 4: Introduction to Power Tools
5. Chapter 5: Introduction to Construction Drawings
6. Chapter 6: Basic Rigging
7. Chapter 7: Basic Communication Skills
8. Chapter 8: Basic Employability Skills
9. Chapter 9: Introduction to Materials Handling

Course Learning Objectives Assessed:

Colby Community College (CCC) uses the North American Board of Certified Energy Practitioners (NABCEP) to help guide the college in learning outcomes. These outcomes are created for those individuals wanting to attain knowledge and application of solar photovoltaic system operations, CCC's technical track of courses is the perfect curriculum for students wanting to take the NABCEP PV Entry Level Exam. Below are the ten objectives contained in the North American Board of Certified Energy Practitioners' (NABCEP's) Entry Level Program:

1. PV Markets and Applications
2. Safety Basics
3. Electricity Basics
4. Solar Energy Fundamentals
5. PV Module Fundamentals
6. System Components
7. PV System Sizing Principles
8. PV System Electrical Design
9. PV System Mechanical Design
10. Performance Analysis, Maintenance and Troubleshooting

CCC Student Learning Outcomes (NABCEP) to be measured in This Course

1. Safety Basics (2.2) List different types of personal protective equipment (PPE) commonly required for installing and maintaining systems
2. Safety Basics (2.3) List different methods and identify safe practices for hoisting and rigging, the use of ladders, stairways and guardrails, the use of head, feet, hearing and face protection, the use of power tools, and the use of the appropriate fall protection, including the requirements for personal fall arrest and safety-monitoring systems according to OSHA standards.
3. Safety Basics (2.4) Recognize the principal electrical safety hazards associated with systems, including electrical shock and arc flash

Course Competencies

The overall objective of this course is to introduce the student to the Introductory Craft Skills necessary for careers in Solar Photovoltaics, Small Wind Technology, and the construction industry. This course was specifically designed to be interesting to students, accessible through online education, and organized in a very understandable format.

Chapter 1

- Explain the idea of a safety culture and its importance in the construction crafts
- Identify causes of accidents and the impact of accident costs
- Explain the role of OSHA in job-site safety
- Explain OSHA's General Duty Clause and 1926 CFR Subpart C.
- Recognize hazard recognition and risk assessment techniques
- Explain fall protection, ladder, stair, and scaffold procedures and requirements
- Identify struck-by hazards and demonstrate safe working procedures and requirements
- Identify caught-in-between hazards and demonstrate safe working procedures and requirements
- Define safe work procedures to use around electrical hazards
- Demonstrate the use and care of appropriate personal protective equipment (PPE)
- Explain the importance of hazard communications (HazCom) and Material Safety Data Sheets (MSDSs)
- Identify other construction hazards on your job site, including hazardous material exposures, environmental elements, welding and cutting hazards, confined spaces, and fires

Chapter 2

- Add, subtract, multiply, and divide whole numbers with and without a calculator
- Use a standard ruler, a metric ruler, and a measuring tape to measure
- Add, subtract, multiply, and divide fractions
- Add, subtract, multiply, and divide decimals, with and without a calculator

- Convert decimals to percentages and percentages to decimals
- Convert fractions to decimals and decimals to fractions
- Explain what the metric system is and how it is important in the construction trade
- Recognize and use metric units of length, weight, volume, and temperature
- Recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them

Chapter 3

- Recognize and identify some of the basic hand tools and their proper uses in the construction trade
- Visually inspect hand tools to determine if they are safe to use
- Safely use hand tools

Chapter 4

- Identify power tools commonly used in the construction trades
- Use power tools safely
- Explain how to maintain power tools properly

Chapter 5

- Recognize and identify basic construction drawing terms, components, and symbols
- Relate information on construction drawings to actual locations on the print
- Recognize different classifications of construction drawings
- Interpret and use drawing dimensions

Chapter 6

- Identify and describe the use of slings and common rigging hardware
- Describe basic inspection techniques and rejection criteria used for slings and hardware
- Describe basic hitch configurations and their proper connections
- Describe basic load-handling safety practices
- Demonstrate proper use of American National Standards Institute (ANSI) hand signals

Chapter 7

- Interpret information and instructions presented in both verbal and written form
- Communicate effectively in on-the-job situations using verbal and written skills
- Communicate effectively on the job using electronic communication devices

Chapter 8

- Explain the role of an employee in the construction industry
- Demonstrate critical thinking skills and the ability to solve problems using those skills
- Demonstrate knowledge of computer systems and explain common uses for computers in the construction industry
- Define effective relationship skills
- Recognize workplace issues such as sexual harassment, stress, and substance abuse

Chapter 9

- Define a load
- Establish a pre-task plan prior to moving a load
- Use proper materials-handling techniques
- Choose appropriate materials-handling equipment for the task
- Recognize hazards and follow safety procedures required for materials handling

Method of Instruction:

Lectures, including Power Point presentations and/or video, assigned reading, class discussions either in the physical classroom or online format, individual assignments. Student questions are an important part of the learning process. Students will be expected to participate in open class discussions and assignments. Be prepared for questions on given topics.

Method of Evaluation:

The student's evaluation whether in the classroom or online, will be based upon discussion, quizzes, learning outcomes, and a final exam. The following will be how the course will be weighted:

1. Discussion Questions 10%
2. Review Questions 25%

3. Quizzes 25%
4. Learning Outcomes assessments 15%
5. Final Exam 25%.

Grading Scale

Letter grades are assigned as follows:

90-100	A
80-89	B
70-79	C
60-69	D
Under 60	F

Course Requirements:

Understanding comes from interacting and you cannot interact if you do not participate in class. Be sure to take notes on what you see in Power Point presentations, assigned reading, or during lectures. Important objectives are presented in each class meeting or in each online unit. Communicating your thoughts in the physical classroom or within the online threaded discussion is an important component of learning and participation is an important part of the course.

Assignment Policy:

All assignments must be completed and handed in at the designated times assigned by the instructor. No late work will be accepted. (Usually, assignments will be requested at the beginning of class; any attempt to turn in later will be considered late and not accepted.)

Test Policy:

Instructor reserves the right to schedule proctored exams.

Attendance Policy:

For the physical classroom, attendance is required and roll will be taken daily. Class interaction is important, and material covered in lecture may appear on the test. For online instruction of this course, your attendance is noted by your interaction on the discussion thread and through online assessments.

Assessment

Colby Community College assesses student learning at several levels: general education, program, and course. The goal of these assessment activities is to improve student learning. As a student in this course, you will participate in various assessment activities. An example of your work, a paper, some test questions, a presentation, or other work may be selected for assessment. This process will not affect your grade, will not require you do additional work and your evaluation will be confidentially handled. Results of these activities will be used to improve teaching and learning at Colby Community College.

Syllabus Information Disclaimer I reserve the right to change any information contained in this document, when necessary, with adequate notice given to the student. Notice shall be given in the classroom during class (or online). No other notice is required. It is the students' responsibility to stay current with any changes, modifications, adjustments or amendments that are made to this document."

Accommodations for Students with Disabilities According to the Americans with Disabilities Act, it is the responsibility of each student with a disability to notify the college of his/her disability and to request accommodation. If a member of the class has a documented learning disability or a physical disability and needs special accommodations, he/she should contact Student Support Services, which is located in the Student Union."

Equipment: None

Bibliography: NCCER Contren Learning Series (2009). Core Curriculum "Introductory Craft Sills," (4th ed.). Upper Saddle River, NewJersey Pearson Education, Inc.

Recommended Resources:

1. Photovoltaic Systems, 2nd Edition, by James P. Dunlop, ISBN 978-0-8269-1287-9 ©July 2009 National Joint Apprenticeship and Training Committee and American Technical Publishers: www.jimdunlopsolar.com
2. Code of Federal Regulations, Chapter 29 Part 1926 – Safety and Health Regulations for Construction, Occupational Safety and Health Administration: www.osha.gov
3. 2008 National Electrical Code ®, NFPA 70 or 2008 National Electrical Code® Handbook, National Fire Protection Association®: www.nfpa.org
4. Study Guide for Photovoltaic System Installers, North American Board of Certified Energy Practitioners, Version 4.2, April 2009: www.nabcep.org
5. Photovoltaics Design and Installation Manual, ISBN 978-0-86571-520-2. ©2007 Solar Energy International, New Society Publishers (available in both English and Spanish): www.solarenergy.org

Revised & Approved May 2003
Revised 08/04
Revised 08/11