Course Acronym:	CTEC
Course Number:	220
Descriptive Title:	Hinging Systems and Doors
Division:	Industry and Technology
Department:	Construction Technology
Course Disciplines:	Cabinet Making AND Furniture Making
Catalog Description:	This course is the study of principles and operation of hinge mortising and insertion machine (eco-press). Topics include working with hinges, hinging plates, appropriate door construction and installation. *Note: Completion of the degree or certificate requirements qualifies students to receive a maximum of two years credit toward the California State Contractor's License for the C-6 Cabinet, Millwork and Finish Carpentry examination.*
Prerequisite:	Construction Technology 200 or Construction Technology 201 or Construction Technology 202 or Construction Technology 203 with a minimum grade of C or concurrent enrollment
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	1.5
Hours Laboratory (per week):	3
Outside Study Hours:	3
Total Course Hours:	81
Course Units:	2.5
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	03/18/2013
Transfer UC:	No
Effective Date:	

General Education: ECC	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	
Student Learning Outcomes:	**SLO #1 Ecopress Hinge Mortising** Students will set up Ecopress for hinge mortising. **SLO #2 Cabinet Door Hinge** Students will mortise and insert hinge in a cabinet door. **SLO #3 Hinge Plate** Students will install ½" overlap hinge plate face frame application.
Course Objectives:	1. Complete a written comprehensive woodshop safety test with 100% accuracy. 2. Calculate correct measurements in metric units to mortise for various hinge applications. 3. Set-up hinge mortising insertion machines for euro style face frame application. 4. Install and adjust concealed hinges utilizing the three individual adjustment points. 5. Mortise door for 120 degree euro style hinge. 6. Install cutters for cope and stick door construction.
Major Topics:	**I. OVERVIEW OF HINGING SYSTEMS AND DOORS (1.5 hours, lecture)** 1. A. Shop procedures B. Vendors and suppliers C. Resources and references **II. OVERVIEW OF HINGING SYSTEMS AND DOORS (3 hours, lab)** 1. A. Cages and storerooms B. Toolroom C. Clamping and gluing area D. Finishing room E. Proper shop organization F. Clean-up procedures **III. SAFETY (3 hours, lecture)**

1.
   A. Safety procedures
   B. Safety test

IV. SAFETY (6 hours, lab)

1.
   A. Proper operation of woodworking equipment
   B. Safety concerns
   C. Safe lab practices

V. DOORS (6 hours, lecture)

1.
   A. Styles suitable for face-frame euro hinging
   B. Dimensions of stiles and rails
   C. Calculating overlay
   D. Profiles of stile and rail bits
   E. Bit installation and use techniques
   F. Use of router table

VI. DOORS (12 hours, lab)

1.
   A. Selecting style
   B. Calculating dimensions
   C. Milling stock
   D. Machining cope and stick joints
   E. Dry assembling and dimensioning center panel
   F. Reassembling

VII. ECO-PRESS (3 hours, lecture)

1.
   A. Configuring for face frame mode
   B. Specifications for mortise
      1. Tab dimension
      2. Depth
2.

   C. Spacing
      1. Standard
      2. Lightwell
      3. Roll-outs

VIII. ECO-PRESS (6 hours, lab)

1.
   A. Setting for face frame mode
   B. Determining and setting set tab dimension
   C. Setting depth
   D. Choosing spacing

E. Mortise
F. Repeating three different spacings

IX. HINGE SELECTION (1.5 hours, lecture)

1.
A. Half overlay
B. Full overlay
C. Self-closing
D. Free swinging
E. Soft closing

X. HINGE SELECTION (3 hours, lab)

1.
A. Fabricating three sample boards
B. Selecting three individual hinge styles
C. Installing each pair in its own sample

XI. FACE FRAME EURO HINGE (1.5 hours, lecture)

A. Material selection
B. Critical dimensions
C. Joinery techniques

XII. FACE FRAME EURO HINGE (3 hours, lab)

1.
A. Calculating dimensions
B. Laying out and milling to specifications
C. Assembling using selected joinery techniques

XIII. HINGEPLATES (3 hours, lecture)

1.
A. Application
1. Degree of swing
2. Special applications
B. Style
1. Steel plate (low cost)
2. Screw-on
3. Clip-on
C. Adjustments
1. Manual
2. Cam
3. Plate spacer
4. Adapter plates

XIV. HINGE PLATES (6 hours, lab)

1.
A. Selecting

B. Fabricating face frames
C. Installing three individual styles of hinge plates on sample face frames
D. Hanging sample doors
E. Practicing adjustment options

XV. FRAMELESS DOOR APPLICATION (3 hours, lecture)

1.
A. Mortise settings
1. Tab
2. Depth
3. Spacing
B. Mortising
1. Installation

XVI. FRAMELESS DOOR APPLICATION (6 hours, lab)

1.
A. Milling components
B. Assembling three sample doors
C. Installing three different styles of hinges

XVII. FRAMELESS HINGE PLATE APPLICATION (1.5 hours, lecture)

1.
A. Contrasting to face frame plates
B. Location
C. Adjustment

XVIII. FRAMELESS HINGE PLATE APPLICATION (3 hours, lab)

1.
A. Fabricating frameless cabinet mock-up
B. Installing three different plate styles
C. Hanging doors and adjustment

XIX. ALTERNATIVE MORTISING METHODS (3 hours, lecture)

1.
A. Drill press
B. Router

XX. ALTERNATIVE MORTISING METHODS (6 hours, lab)

1.
A. Drill press
1. Measuring and locating drill
2. Creating jig for consistency
3. Using commercial jig

	B. Router 1. Creating jig and mortise 2. Using commercial routing jig
Total Lecture Hours:	27
Total Laboratory Hours:	54
Total Hours:	81
Primary Method of Evaluation:	3) Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	Utilizing an ecopress, produce a mortise in a door. Consult instructor for evaluation.
Critical Thinking Assignment 1:	Using the hinge mortising insertion machine manufacturer's manual, set up and produce a mortise bore for 170 degree hinge. Consult instructor for evaluation.
Critical Thinking Assignment 2:	Install and adjust a cam hinged plate to a hanging door to achieve proper alignment. Consult instructor for evaluation.
Other Evaluation Methods:	Class Performance
Instructional Methods:	Demonstration Lab Lecture
If other:	
Work Outside of Class:	Other (specify), Required reading
If Other:	Research
Up-To-Date Representative Textbooks:	Grass America, GRASS AMERICA MANUFACTURER'S MANUAL, Grass America, 2018. William Umstattd and Charles Davis, MODERN CABINETMAKING, Goodheart Willcox Publishers, 2016. (Discipline Standard)
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	Safety glasses Ear plugs Dust mask Closed toe shoes
Requisite:	Prerequisite
Category:	sequential
Requisite course(s): List both prerequisites	Construction Technology 200 or Construction Technology 201 or

and corequisites in this box.	Construction Technology 202 or Construction Technology 203
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	**Ability to use woodshop machinery and basic hand tools.** CTEC 200 - Set-up table saw and rip plywood. CTEC 201 - Set-up and calibrate a dado head. CTEC 203 - Set-up and use router to machine a rabbet cut. CTEC 202 - Set-up and use line boring machine. **Ability to interpret manufacturer's specifications.** CTEC 200 - Interpret perspective cabinet drawings. CTEC 203 - Interpret perspective cabinet drawings. CTEC 201 - Interpret perspective cabinet drawings. **Ability to perform basic mathematical computations.** CTEC 203 - Square rough lumber into usable stock. CTEC 201 - Calculate the number of sheets of plywood required for a cabinet. CTEC 200 - Interpret perspective cabinet drawings. CTEC 202 - Join lumber to increase width and change grain direction. **Ability to read a standard tape measure.** CTEC 200 - Set-up table saw and rip plywood. CTEC 201 - Set-up and calibrate a dado head. CTEC 203 - Square rough lumber into usable stock. CTEC 202 - Machine a dado joint.
Requisite Skill:	or concurrent enrollment
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	If students enroll in one of the basic cabinet making classes concurrently, Construction Technology 200, 201, 202 or 203, students will have the skills needed to succeed in this course.
Requisite course:	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	

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Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Jack Selph
Date:	10/09/2012
Original Board Approval Date:	03/18/2013
Last Reviewed and/or Revised by:	Jack Selph
Date:	02/15/2023
Last Board Approval Date:	07/17/2023 effective FALL 2024