AGBS B2 COURSE OUTLINE OF RECORD

1. DISCIPLINE AND COURSE NUMBER: AGBS B2
2. COURSE TITLE: Agricultural Economics
3. SHORT BANWEB TITLE: 
4. COURSE AUTHOR: Gardella, Linda G.
5. COURSE SEATS: -
6. COURSE TERMS: 70 = Fall
7. CROSS-LISTED COURSES: 
8. PROPOSAL TYPE: BC Course Revision
9. START TERM: 70 = Fall, 2013
10. C-ID: 
11. CATALOG COURSE DESCRIPTION: Course covers the role of agriculture in the economic system. Basic economic principles are applied to agriculture production, pricing and marketing. Emphasis placed on effects of state and federal farm programs on production agriculture's economic position.
12. GRADING METHOD
   Default: S = Standard Letter Grade
   Optional: A = Audit
13. TOTAL UNITS: 3
14. INSTRUCTIONAL METHODS / UNITS & HOURS:

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Non-Standard Hours Justification:
15. **REPEATABILITY**
   Type: Non-Repeatable Credit

16. **MATERIALS FEE:** No

17. **CREDIT BY EXAM:** No

18. **CORE MISSION APPLICABILITY:** Associate Degree Applicable (AA/AS); Certificate of Achievement (COA); CSU Transfer; Career Technical Education (CTE)

19. **STAND-ALONE:** No

20. **PROGRAM APPLICABILITY**
   Required:
   - Agricultural Business Management AA (AA Degree Program)
   - Agricultural Business Management AS (AS Degree Program)
   - Agriculture Business Management Cert (Certificate of Achievement)
   - Animal Science AA (AA Degree Program)
   - Animal Science AA (AS Degree Program)
   - Animal Science AS (AS Degree Program)
   - Animal Science AS (AS Degree Program)
   - Animal Science AS (AS Degree Program)
   - Forestry Cert (Certificate of Achievement)
   - Forestry Major AA (AA Degree Program)
   - Forestry Major AA (AS Degree Program)
   - Forestry Major AS (AS Degree Program)
   - Plant Science AA (AA Degree Program)
   - Plant Science AA (AS Degree Program)
   - Plant Science AS (AS Degree Program)

   Restricted
   Elective:
   Elective:

21. **GENERAL EDUCATION APPLICABILITY**
   **Local:**
   - BC GE Area D: Social, Political, and Economic Institutions and Behavior, Historical = D.2. Foundations in the Social Sciences;

   **IGETC:**
   - CSU GE Area D: Social, Political, and Economic Institutions and Behavior, Historical = D2 - Economics;

   **UC Transfer Course:**
   - University of California, Davis = AGE 1

   **CSU Transfer Course:**
   - California Polytechnic State University = AGB 101
   - California State University, Fresno = AGBS 5

22. **STUDENT LEARNING OUTCOMES** Upon completion of the course, the student will be able to
   1. Compare and contrast the role of agriculture in the economic structure of the state, country and world.
   2. Define economic terms.
3. Analyze market conditions and predict price.
4. Discuss legislation affecting the farm system.
5. Describe changes in monetary and fiscal policies affecting this country.
6. Compare and contrast different economic systems.
7. Define the laws of supply and demand.
8. Contrast and criticize the different economic systems.
9. Solve supply and demand schedules.
10. Construct graphs to utilize given data on cost factors.

23. **REQUISITES**
   
   **Advisory:**
   
   Reading - 1 Level Prior to Transfer
   and
   Writing - 1 Level Prior to Transfer

24. **DETAILED TOPICAL OUTLINE:**
   Lecture:
   
   1) U.S. and Global Food and Fiber Industry (Week 1)
   2) Definition of Agriculture Economics (Week 2-3)
      a) Definition & Scope
      b) Compare and Contrast Microeconomics, Market Economics and Macroeconomics
      c) Price versus Control Economic Systems
   3) Supply, Price Determination and Market Determination (Week 3-5)
      a) Demand
      b) Supply
      c) Price Determination
      d) Market Equilibrium
   4) Economics of Production (Week 5-6)
      a) Single-variable input functions
      b) Production Function
         i) Graph and analyze production functions and identify the three stages of production.
c) Law of Diminishing Marginal Returns

d) Profitability
   i) Construct and Analyze graphs using cost/revenue data to maximize profitability.

5) Costs and Optimal Output Levels / Supply Market Adjustments and Input Demand (Week 7)

6) Competition and the Market (Week 8)
   a) Perfect Competition
   b) Imperfect Competition
      i) Monopolistic Competition
      ii) Oligopolies
      iii) Monopolies

   c) Anti-Trust Laws / Agricultural Bargaining

7) Consumer Behavior & Market Demand(Week 9)
   a) Utility Theory and Consumer Choice
   b) Indifference Curves
   c) The Concept of Elasticity (Week 10-11)
      i) Demand Elasticity
      ii) Cross Price Elasticity
      iii) Income Elasticity
      iv) Supply Elasticity

8) Money and Financial Intermediaries (Week 12)

9) Government Policy and Agricultural Trade (Week 13-14)
   a) International Trade Policy, Monetary Policies/ Fiscal Policy
   b) Government Farm Policy
   c) Trade Agreements

10) Futures Markets/ Financial Markets (Week 14-15)

11) Economic Development and Food (Week 16)
25. **METHODS OF INSTRUCTION**—Course instructional methods may include but are not limited to
   1. Discussion;
   2. Group Work;
   3. Guest Lecturers;
   4. In-class writing;
   5. Instruction through examination or quizzing;
   6. Lecture;
   7. Library;
   8. Outside reading;
   9. Problem Solving;
  10. Written work;

26. **OUT OF CLASS ASSIGNMENTS**: Out of class assignments may include but are not limited to
   1. Textbook Reading Assignments
   2. Writing will involve written reports of subjects covered in text chapters and/or particular pieces of research such as “understanding the farm problems and programs.”
   3. Writing will involve written problem sets using graphs to explain concepts such as demand curve, elastic or demand, and perfect competition.
   4. This course requires students to develop an understanding of supply and demand concepts as they apply to agriculture. Students will analyze the differences between individual’s supply and demand and industry’s supply and demand. Students will express this difference in graphs and written format. Students will make various deductions based upon their understanding of supply and demand.

27. **METHODS OF EVALUATION**: Assessment of student performance may include but is not limited to
   - Comprehensive Quizzes and Exams
   - Written Critical Thinking Scenarios
   - Problem Analysis and Solution
   - Research and Term Papers

28. **TEXTS, READINGS, AND MATERIALS**: Instructional materials may include but are not limited to
   - Manuals
   - Periodicals
   - Software
   - Other
29. **METHOD OF DELIVERY:** Face to face;

30. **MINIMUM QUALIFICATIONS:** Agricultural Production;

31. **APPROVALS:**

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KERN COMMUNITY COLLEGE DISTRICT – BAKERSFIELD COLLEGE

ANTH B1 COURSE OUTLINE OF RECORD

1. DISCIPLINE AND COURSE NUMBER: ANTH B1

2. COURSE TITLE: Physical Anthropology

3. SHORT BANWEB TITLE: Physical Anthropology

4. COURSE AUTHOR: Moreland, Krista J.

5. COURSE SEATS: -

6. COURSE TERMS: 30 = Spring; 50 = Summer; 70 = Fall

7. CROSS-LISTED COURSES:

8. PROPOSAL TYPE: BC Course Revision

9. START TERM: 50 = Summer, 2011

10. C-ID: ANTH 110

11. CATALOG COURSE DESCRIPTION: Study of human biology through time. Examines the biological development of the hominin lineage with consideration of cultural developments. Topics include biology and genetics, evolutionary processes and speciation, nonhuman primates, examination of the hominin lineage through fossils and molecular data, technological developments, and human diversity.

12. GRADING METHOD

   Default: S = Standard Letter Grade

   Optional:

13. TOTAL UNITS: 3

14. INSTRUCTIONAL METHODS / UNITS & HOURS:

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Non-Standard Hours Justification:

15. **REPEATABILITY**  
   Type: Non-Repeatable Credit

16. **MATERIALS FEE:** No

17. **CREDIT BY EXAM:** No

18. **CORE MISSION APPLICABILITY:** UC Transfer; Associate Degree Applicable (AA/AS); CSU Transfer

19. **STAND-ALONE:** No

20. **PROGRAM APPLICABILITY**  
   **Required:** Anthropology Major AA (AA Degree Program)  
                  Anthropology Major AA (AA Degree Program)  
                  Liberal Arts Major AA (AA Degree Program)
   **Restricted Elective:**  
   **Elective:**

21. **GENERAL EDUCATION APPLICABILITY**  
   **Local:** BC GE Area B: Physical and its Life Forms (mark all that apply) = B.1.  
              Natural Sciences;
   **IGETC:** IGETC Area 5: Physical and Biological Sciences = 5B: Biological Science without a Lab;
   **CSU:** CSU GE Area B: Physical and its Life Forms (mark all that apply) = B2 - Life Science;
   **UC Transfer Course:** University of California, Davis = Anthro 1 Human Evol Biol
   **CSU Transfer Course:** California Polytechnic State University = Ant 250 Biological Anthropology  
                           California State Polytechnic University, Pomona = Ant 101 Introduction to Biological Anthropology

22. **STUDENT LEARNING OUTCOMES** Upon completion of the course, the student will be able to

   1. Identify and illustrate all segments of the human lineage, be able to arrange and organize species through definable traits, and be able to compare and contrast prevailing models explaining human dispersals.

   2. Summarize and distinguish theoretical orientations, evaluate and diagram anthropological data, illustrate evolutionary processes, and outline biological processes.

   3. Differentiate between biological and cultural developments, contrast and interpret paleoanthropological data, and integrate data on living non-human primates with the fossil record.
23. **REQUISITES**
   
   **Advisory:**
   Reading - 1 Level Prior to Transfer and
   Writing - 1 Level Prior to Transfer

24. **DETAILED TOPICAL OUTLINE:**

   **Lecture:**
   
   **Week One - Introduction to Anthropology**
   Anthropological sub-disciplines
   Anthropological concepts
   Scientific process

   **Week Two - Evolutionary Theory**
   History and development of anthropology
   Charles Darwin’s contributions
   Natural selection

   **Week Three - Biology**
   Cells and cell structure
   Genes and DNA
   Protein synthesis
   Chromosomes

   **Week Four - Genetic Inheritance**
   Gregor Mendel’s contributions
   Genetic inheritance
   Genetic variation
   Processes of evolutionary change

   **Week Five - Adaptation and Variation**
   Population genetics
   Genetic variation and distribution of genetic traits
   Adaptation and environments

   **Week Six - Mammalian Evolution**
   Taxonomic systems
   Constructing classifications
   Species and speciation
   Class mammalia

   **Week Seven - Primates**
   Members of the primate order
   Key traits for major primate groupings

   **Week Eight - Primate Behavior**
Primatology
Studying primate behavior
Primate social structure

Week Nine - The Fossil Record
Paleoanthropology
Dating methods
Geologic time scale

Week Ten - Primate Origins
Primate fossil record
Key traits defining early primates
Speciation and branching of primate forms

Week Eleven - Hominin Origins
Bipedalism
Skeletal structure and traits for early hominins
Earliest hominin fossils and related traits

Week Twelve - Ardipithecus and Australopithecus genera
Traits, timeline, and location of Ardipithecines
Traits, timeline and location of Australopithecines
Definitive genera traits

Week Thirteen - Earliest member of the _homo_ genus
Traits defining homo genus
Traits, timeline and location of early homo forms
Lower Paleolithic tools
Traits, timeline and location of later homo forms
Dispersal out of Africa

Week Fourteen - Archaic _Homo sapiens_ and Neanderthals
Traits, timeline and location of Archaic _H. sapiens_
Traits, timeline and location of Neanderthals
Technological developments for Neanderthals and Archaic forms
Social behaviors for Neanderthals and Archaic forms

Week Fifteen - Modern _Homo sapiens_
Timeline and location of modern _H. sapiens_
Anatomical and behavioral traits for modern _H. sapiens_
Technological developments
Symbolism
Worldwide dispersal

Week Sixteen - Final Examinations

25. **METHODS OF INSTRUCTION**—Course instructional methods may include but are not limited to
1. Audiovisual;
2. Case Study;
3. Demonstration;
4. Lecture;
5. Library;
6. Outside reading;
7. Problem Solving;
8. Written work;
9. Other Methods:

   In class lectures utilizing power point to display topic outlines and terms; and photos of genetics, anthropologists, primates, fossils, sites and world maps

   Assigned readings from the text, handouts, and library books/articles

   In class discussion of assigned readings

   Films/film clips on biological processes, primates, and the hominin lineage

   Illustrating key physical traits by using casts and models of primates and hominins skulls/fossils

   The following relate to handout and/or in class exercises/reviews:

   Charts depicting evolutionary processes, such as genetic disorders, or migration and movement of populations

   Charts depicting the primate order, and the hominin lineage

   Maps showing locations of paleoanthropological sites and the geographic distribution of hominins

   Identifying illustrations of cells, genes, DNA, primates, skeleton, and key hominin traits

26. **OUT OF CLASS ASSIGNMENTS:** Out of class assignments may include but are not limited to

   Outside readings of required material for class discussion and in-class group work
   Research related to the completion of term papers, essays and/or presentations * see example in attached file
27. **METHODS OF EVALUATION:** Assessment of student performance may include but is not limited to

Students will write no less than 10 written pages in essays, exams, and other assignments

- Multiple-choice, essay, and short-answer exams
- Research papers
- Oral presentations
- In-class discussions
- Poster presentations
- Cooperative learning experiences
- Identification of fossils/biological basics
- Generating tables/charts
- Homework problem solving exercises: See attachment for example

28. **TEXTS, READINGS, AND MATERIALS:** Instructional materials may include but are not limited to

- **Textbooks**
- **Manuals**
- **Periodicals**
- **Software**
- **Other**
  - Articles and/or supplemental resources on reserve at the library.

29. **METHOD OF DELIVERY:**

   Face to face;

30. **MINIMUM QUALIFICATIONS:**

   Anthropology (Masters Required);

31. **APPROVALS:**

   - **Origination Date** 11/18/2010
   - **Last Outline Revision** 01/01/2011
   - **Curriculum Committee Approval** 01/27/2011
   - **Board of Trustees** 03/10/2011
   - **State Approval**
UC Approval Status: Approved

CSU Approval Status: Approved

IGETC Approval Status: 70 = Fall 1991

CSU GE Approval Status: 70 = Fall 1999

Data Element Changes

Course ID (CB00): CCC000335062

TOP Code (CB03): 2202.00 - Anthropology;

Course Credit Status (CB04): D - Credit - Degree Applicable;

Course Transfer Status (CB05): A = Transferable to both UC and CSU

Course Units of Credit Maximum High (CB06): 3

Course Units of Credit Minimum Low (CB07): 3

Course Basic Skills (BS) Status (CB08): N = Course is not a basic skills course.

SAM Code (CB09): E = Non-Occupational;
Cooperative Education Course Status (CB10): Not part of Coop Work Exp;

Course Classification Code (CB11): Liberal Arts and Sciences;

Course Special Status (CB13): N - Not Special;

CAN Code (CB14):

CAN-Code Seq (CB15):

Course Prior to College Level (CB21): Not Applicable;

Course Non-Credit Category (CB22): Not Applicable, Credit Course;

Funding Agency Category (CB23): Not Applicable

Course Program Status (CB24): 1 - Program Applicable;
KERN COMMUNITY COLLEGE DISTRICT – BAKERSFIELD COLLEGE

INDR B20A COURSE OUTLINE OF RECORD

1. DISCIPLINE AND COURSE NUMBER: INDR B20A

2. COURSE TITLE: Computer Aided Drafting and Design (CAD)

3. SHORT BANWEB TITLE:

4. COURSE AUTHOR: Rozell, Mary E.

5. COURSE SEATS: -

6. COURSE TERMS: 30 = Spring; 70 = Fall

7. CROSS-LISTED COURSES:

8. PROPOSAL TYPE: BC Course Revision

9. START TERM: 50 = Summer, 2013

10. C-ID:

11. CATALOG COURSE DESCRIPTION: An intensive course utilizing a computer aided design (CAD) program to obtain graphic solutions, design refinements, modifications, and delineations in both 2D and 3D for industrial, architectural, and engineering drawings. Emphasizes technology skills that are necessary to function as an entry-level CAD operator.

12. GRADING METHOD

   Default: S = Standard Letter Grade
   Optional: A = Audit

13. TOTAL UNITS: 3

14. INSTRUCTIONAL METHODS / UNITS & HOURS:

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Non-Standard Hours Justification:

15. **REPEATABILITY**
   Type: Non-Repeatable Credit

16. **MATERIALS**
    Fee: Yes
    Fee: 3.00
    Justification: Materials fee (as of Summer 2014)

17. **CREDIT BY EXAM:** No

18. **CORE MISSION APPLICABILITY:**
    UC Transfer; Job Skills Certificate; Associate Degree Applicable (AA/AS); CSU Transfer; Career Technical Education (CTE)

19. **STAND-ALONE:** No

20. **PROGRAM APPLICABILITY**
    Required:
    Architectural CAD (Job Skills Certificate)
    Architectural CAD (Job Skills Certificate)
    Architectural CAD (Job Skills Certificate)
    Architectural CAD (Job Skills Certificate)
    AutoCAD (Job Skills Certificate)
    Industrial Drawing Major AA (AA Degree Program)
    Industrial Technology (General) Major AS (AS Degree Program)
    Industrial Technology (General) Major AS (AS Degree Program)
    Industrial Technology, Industrial Drawing Option AS (AS Degree Program)
    Industrial Technology, Industrial Drawing Option AS (AS Degree Program)
    Industrial Technology, Woodworking and Cabinetmaking Option AS (AS Degree Program)

    Restricted
Elective:

    Elective:
    Architectural Drafting Major AA (AA Degree Program)
    Architectural Drafting Major AA (AA Degree Program)
    Architectural Drafting Major AA (AA Degree Program)
    Architectural Drafting Major AA (AA Degree Program)
    Cabinetmaking Cert (Certificate of Achievement)
    Construction Technology Cert (Certificate of Achievement)
    Construction Technology Cert (Certificate of Achievement)
    Industrial Technology, Manufacturing Technology Option AS (AS Degree Program)
    Manufacturing Technology Cert (Certificate of Achievement)
    Manufacturing Technology Cert (Certificate of Achievement)

21. **GENERAL EDUCATION APPLICABILITY**
    Local:
    IGETC:
22. **STUDENT LEARNING OUTCOMES** Upon completion of the course, the student will be able to

1. Demonstrate skills needed to navigate the AutoCAD interface.
2. Apply correct drawing settings in a variety of situations including architectural, engineering, and mechanical drawings.
3. Create, modify, and apply dimensions and dimension styles appropriate for architectural, engineering, and mechanical drawings.
4. Employ the Design Center to reuse information and increase productivity.
5. Demonstrate understanding of the differences between model space and layout space by composing drawings that display objects in various scales.
6. Employ solid modeling techniques to create three-dimensional objects and translate them into two-dimensional drawings according to industry standards.
7. Create animations and renderings that will aid in conveying spatial relationships and mechanical concepts.
8. Cooperate with peers to design and produce drawings and physical models of complex objects with multiple parts.
9. Understand and assume responsibility for project deadlines as they affect mechanical design and practice.

23. **REQUISITES**

   **Prerequisite:**
   
   INDR B10
   
   with a grade of 'C' or better
   
   Content Review 4.27
   
   and
   
   INDR B11
   
   with a grade of 'C' or better
   
   Content Review 4.73
   
   or
   
   equivalent experience to be evaluated by the instructor
   
   Content Review 4.5

24. **DETAILED TOPICAL OUTLINE:**

   **Lecture:**
Week 1  Introduction and Orientation / Review
Week 2  Inquiry Commands
Week 3  Dimensioning Basics
Week 4  Template Drawings
Week 5  Model Space and Paper Space
Week 6  Scaling in Viewports
Week 7  Tool Palettes and Design Center (Autodesk Seek)
Week 8  Creating Production-Quality Drawings
Week 9  Advanced Drawing and Detailing
Week 10 Basic 3D Concepts
Week 11 Solid View and Solid Draw Commands
Week 12 Advanced3D Concepts
Week 13 Express Tools, Visualization, Presentation Tools
Week 14 Express Tools and Advanced Applications
Week 15 Final Project

Lab:

This course is designed to use AutoCAD for industrial drawing students. Coursework is designed to logically and sequentially develop skills necessary to effectively manipulate the software to produce industry-quality drawings, illustrations, and animations suitable for presentation.

During the lab session each week, students will work through guided practice and independent application of the concepts introduced in lecture. There will be approximately 3 hours of lab each week.

25. METHODS OF INSTRUCTION--Course instructional methods may include but are not limited to

1. Computational Work;
2. Demonstration;
3. Laboratory;
4. Lecture;
5. Presentations (by students);
6. Problem Solving;
7. Project-based learning;

26. OUT OF CLASS ASSIGNMENTS: Out of class assignments may include but are not limited to

Students will complete a series of assignments designed to logically and sequentially develop
skills and techniques necessary to develop proficiency and competency using the AutoCAD program. Beginning assignments will deal with 2D drawing and dimensioning. Intermediate assignments will cover 3D techniques, Boolean operations and editing. Advanced projects will include the development of industry-quality drawings including views, dimensions, and sections; the final project will demonstrate competence in all of the above as well as technical illustrations (assembly drawings), and animations.

27. **METHODS OF EVALUATION:** Assessment of student performance may include but is not limited to
   
   All SLOs will be graded on the following criteria:

   1. Projects will be assigned that are designed to evaluate student understanding and application of each topic.
   2. Present completed assignments in printed and electronic format for instructor evaluation.
   3. Demonstrate various skills and techniques to the instructor and the class.
   4. Tests and quizzes.

28. **TEXTS, READINGS, AND MATERIALS:** Instructional materials may include but are not limited to

   - **Textbooks**
     - No Author. (2000) *No Textbook Is Required*, No Publisher
     - This is for no textbook option
     - No Author. (2000) *No Textbook Is Required*, No Publisher
     - This is for no textbook option
     - No Author. (2000) *No Textbook Is Required*, No Publisher
     - This is for no textbook option
   - **Manuals**
   - **Periodicals**
   - **Software**
   - **Other**
     - Faculty-generated class pack. Updated on a yearly basis
     - You may copy and paste this form if there is more than 1 prerequisite or advisory. Forms are also available on the intranet at:
     - http://intranet.bc.cc.ca.us/comms/Curriculum/Curriculum_Forms/

29. **METHOD OF DELIVERY:**

   Face to face;

30. **MINIMUM QUALIFICATIONS:**

   Architecture; Construction Technology; Engineering (Masters Required); Industrial Design; Industrial Technology;

31. **APPROVALS:**

   Origination Date 07/18/2012
   Last Outline Revision 09/01/2008
   Curriculum Committee Approval 01/31/2013
   Board of Trustees 03/14/2013
State Approval  
12/30/2014  
UC Approval  
UC Approval Status  
70 = Fall 1999  
CSU Approval  
CSU Approval Status  
50 = Summer 1998  
IGETC Approval  
IGETC Approval Status  
CSU GE Approval  
CSU GE Approval Status  

Data Element Changes  
Data Justification  
Course Element Changes  
Change in hours  
Course Change Justification  
Course ID (CB00)  
CCC000291898  
TOP Code (CB03)  
0953.00 - Drafting Technology*;  
Course Credit Status (CB04)  
D - Credit - Degree Applicable;  
Course Transfer Status (CB05)  
A = Transferable to both UC and CSU  
Course Units of Credit Maximum High (CB06):  
3  
Course Units of Credit Minimum Low (CB07):  
3  
Course Basic Skills (BS) Status (CB08):  
N = Course is not a basic skills course.  
SAM Code (CB09):  
C = Occupational;
Cooperative Education
Course Status (CB10):
Not part of Coop Work Exp;

Course Classification Code (CB11):
Not Applicable, Credit Course;

Course Special Status (CB13):
N - Not Special;

CAN Code (CB14):

CAN-Code Seq (CB15):
Not Applicable;

Course Prior to College Level (CB21):
Not Applicable;

Course Non-Credit Category (CB22):
Not Applicable, Credit Course;

Funding Agency Category (CB23):
Not Applicable

Course Program Status (CB24):
1 - Program Applicable;
1. **DISCIPLINE AND COURSE NUMBER:** MFGT B2

2. **COURSE TITLE:** CNC Lathe Programming & Operation

3. **SHORT BANWEB TITLE:** CNC Lathe

4. **COURSE AUTHOR:** Dixon, Jason R.

5. **COURSE SEATS:** -

6. **COURSE TERMS:** 70 = Fall

7. **CROSS-LISTED COURSES:**

8. **PROPOSAL TYPE:** BC Course Update

9. **START TERM:** 30 = Spring, 2011

10. **C-ID:**

11. **CATALOG COURSE DESCRIPTION:** Set-up, operation and programming of a computer numerical control lathe.

12. **GRADING METHOD**

    **Default:** S = Standard Letter Grade

    **Optional:**

13. **TOTAL UNITS:** 3

14. **INSTRUCTIONAL METHODS / UNITS & HOURS:**

    | Method                    | Min Units | Min Hours |
    |---------------------------|-----------|-----------|
    | Lecture                   | 2         | 36        |
    | Lab                       | 1         | 54        |
    | Activity                  | 0         | 0         |
    | Open Entry/Open Exit      | 0         | 0         |
    | Volunteer Work Experience | 0         | 0         |
    | Paid Work Experience      | 0         | 0         |
    | Non Standard              | 0         | 0         |

    Non-Standard Hours Justification:

15. **REPEATABILITY**

    **Type:** Non-Repeatable Credit
16. **MATERIALS FEE:** No

17. **CREDIT BY EXAM:** No

18. **CORE MISSION APPLICABILITY:** Associate Degree Applicable (AA/AS);Certificate of Achievement (COA);CSU Transfer;Career Technical Education (CTE)

19. **STAND-ALONE:** No

20. **PROGRAM APPLICABILITY**

   **Required:**
   - Engineering Technology A.S. (AS Degree Program)
   - Engineering Technology: Engineering Technician A.S. (AS Degree Program)
   - Industrial Technology (General) Major AS (AS Degree Program)
   - Industrial Technology (General) Major AS (AS Degree Program)
   - Industrial Technology, Manufacturing Technology Option AS (AS Degree Program)
   - Manufacturing Technology Cert (Certificate of Achievement)
   - Manufacturing Technology Cert (Certificate of Achievement)

   **Restricted Elective:**

   **Elective:**

21. **GENERAL EDUCATION APPLICABILITY**

   **Local:**
   - IGETC:
   - CSU:
   - UC Transfer Course:
   - CSU Transfer Course:

   California Maritime Academy = EPO 215 Manufacturing Processes I
   Needs articulation
   California State Polytechnic University, Pomona = IME 112
   INDUSTRIAL AND MANUFACTURING ENGINEERING FUNDAMENTALS
   (needs articulation)
   California State University, Fresno = IT 177 Computer-Aided
   Manufacturing Systems II (Needs articulation)
   California State University, Los Angeles = ENGR 230 Design and
   Manufacturing in Engineering

22. **STUDENT LEARNING OUTCOMES** Upon completion of the course, the student will be able to

    1. Describe the most important cutting operations performed on the CNC lathe.
    2. Describe and calculate cartesian coordinates for the CNC lathe.
    3. Correctly explain and utilize the most commonly used preparatory codes (G codes) and miscellaneous codes (M codes) used in programming lathe operations.
    4. Correctly program using the rough running cycle (G71), rough facing cycle (G72), and finish cycle (G70).
5. Correctly explain 60-degree thread geometry and program a thread-cutting the G76 multiple pass threading cycle.

6. Correctly set up and operate a CNC for a production run of a program written in class

7. Correctly determine cutting speeds and tool feed rates for various part materials.

23. **REQUISITES**

   **Advisory:**

   MFGT B1ab or evaluation by the instructor of student’s machining skills equal to MFGT 1AB including safety skills.

   **Content Review**

   This course is a sequential skills course with safety and technical issues. The introductory course is necessary for success in this course. MFGT B 1 a and b used to be taught separately but are now being taught together as MFGT B1.

   and

   Reading - 1 Level Prior to Transfer

   **Content Review**

   This course requires reading one level prior to transfer because codes and regulations, along with technical material and safety information are essential to this course.

24. **DETAILED TOPICAL OUTLINE:**

   **Lecture:**

   Each topic equals about one class meeting.

   1. Machine configuration
   2. Speeds and feeds
   3. Visualizing program execution
   4. Understanding program zero
   5. Measuring program zero
   6. Assigning program zero
   7. Flow of program processing
   8. Introduction to programming words
   9. Preparation for programming
   10. Types of motion
11. Introduction to compensation
12. Dimensional (wear) tool offsets
13. Geometry offsets
14. Tool nose radius compensation
15. Program formatting
16. The four kinds of program format
17. Simple canned cycles
18. Rough turning and boring multiple repetitive cycle
19. More multiple repetitive cycles
20. Threading multiple repetitive cycle
21. Subprogramming techniques
22. Control model differences
23. Other special features of programming
24. Control model differences
25. Machine panel functions
26. Three modes of operation
27. The key operation procedures
28. Verifying new programs safely

Lab:

Each of the above topics are applied in the laboratory section of this class.

25. **METHODS OF INSTRUCTION--**Course instructional methods may include but are not limited to

1. Demonstration;
2. Laboratory;
3. Lecture;
4. Written work;

26. **OUT OF CLASS ASSIGNMENTS:** Out of class assignments may include but are not limited to
Read the assigned section and answer the study question, utilizing the programming concepts discussed.

Write a functioning G-code program for a given part drawing.

Generate a program for a part using computer-aided manufacturing (CAM) software.

27. **METHODS OF EVALUATION:** Assessment of student performance may include but is not limited to

   In-class and out-of-class textbook and programming assignments.
   Quizzes and tests.

28. **TEXTS, READINGS, AND MATERIALS:** Instructional materials may include but are not limited to

   - Textbooks
   - Manuals
   - Periodicals
   - Software
   - Other

29. **METHOD OF DELIVERY:**

   Face to face;

30. **MINIMUM QUALIFICATIONS:**

   Engineering (Masters Required); Engineering Technology (Masters Required); Industrial Technology; Machine Tool Technology; Manufacturing Technology;

31. **APPROVALS:**

   - Origination Date 08/18/2010
   - Last Outline Revision 02/01/2011
   - Curriculum Committee Approval 02/10/2011
   - Board of Trustees 03/10/2011
   - State Approval
   - UC Approval
   - UC Approval Status
   - CSU Approval
   - CSU Approval Status
   - IGETC Approval
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<td>Added content related to the use of CAM (computer aided manufacturing) software.</td>
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CAN-Code Seq (CB15):

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Not Applicable; Not Applicable, Credit Course; Not Applicable

1 - Program Applicable;