Hanford Joint Union High School District
Curriculum Committee Meeting
District Office • April 14, 2011 (5-L-6)
AGENDA

I. Welcome

II. Approval of March, 2011 Minutes

III. Additions to/Approval of the Agenda

IV. Curriculum Guides/Courses

Note: Any revision to the curriculum guide requires the curriculum guide to be brought forward for approval with the revised document.

Info/Action A. Architectural Drawing (*revised Leadership Skills*) – Combes, Booth
Info/Action B. Introduction to Industrial Processes (*revised Leadership Skills*) – Combes, Booth
Info/Action C. Mechanical Drawing (*revised Leadership Skills*) – Combes, Booth
Info/Action D. General Auto (*revised Leadership Skills*) – Combes, Booth
Info/Action E. Advanced Auto Services (*revised Leadership Skills*) – Combes, Booth
Info/Action F. CAD 1 (*revised Leadership Skills*) – Combes, Booth
Info/Action G. CAD 2 (*revised Leadership Skills*) – Combes, Booth
Info/Action H. Web Page Design 1 (*revised Leadership Skills*) – Combes, Booth
Info/Action I. Word Processing 2 (*revised Leadership Skills*) – Combes, Booth
Info/Action J. Beginning Wood (*revised Leadership Skills*) – Combes, Booth
Info/Action K. Advanced Wood (*revised Leadership Skills*) – Combes, Booth

Tabled ***Tabled Curriculum Guides/Courses***

- *AP Statistics (new book) — Rebman, Nagatani (April)*
- *ASL 1 (new book) — Ayala (tabled from 2009-10) (September)*
- *Earth Science A (no guide) — Compagno, Dixon (April)*

V. Textbooks

New textbooks or new editions of a textbook require the curriculum guide to be brought forward for approval with the revised document.

No textbooks for review at this time.

Tabled ***Tabled Textbooks***

- *Honors World History – Revious-Uhlik, Caudillo (September)*

VI. Discussion/Reports

Presentation A. Intel-Assess Overview

VII. 2010-2011 Curriculum Committee Meeting Dates at the District Office

April 14, 2011
May 12, 2011

- May 1—schedule all second semester finals in Measures
- Submit purchase orders for approved and replacement textbooks for 2010-2011

Hanford Joint Union High School District
Curriculum Committee Meeting
District Office • March 10, 2011 (5-L-6)
MINUTES

I. **Welcome** – Bill opened the meeting at 11:59 p.m. and welcomed everyone.

Voting Members Present: Carol Bennetts, Brian Combes, Jeana Heriman, Denine Jones, Renee Booth, Myndi Hardgrave, Bobby Peters, Brian Dull, Roger Hartman, Cheryl Silva, Ward Whaley and Bill Fishbough.

Non-voting Members Present:

Visitor(s) Present: None

II. **Approval of February, 2011 Minutes** – With no corrections, Jeana motioned to approve the minutes and Denine seconded the motion. The minutes were unanimously approved.

III. **Additions to/Approval of the Agenda** – With no additions, Roger motioned to approve the agenda and Carol seconded the motion. The agenda was unanimously approved.

IV. **Curriculum Guides/Courses**

No guides were presented.

Tabled ***Tabled Curriculum Guides/Courses***

- *AP Statistics (new book) — Rebman, Nagatani (April, 2010)*
- *ASL 1 (new book) — Ayala (tabled from 2009-10) (September, 2010)*
- *Earth Science A (no guide) — Compagno, Dixon (April, 2010)*

V. **Textbooks**.

Action A. Creative Activities – Renee presented this 10th edition textbook for a HWHS course, which was reviewed at the February meeting.

Action B. Art 1 – Denine presented this textbook which was reviewed at the February meeting.

Action C. Art 2 – Denine presented this textbook which was reviewed at the February meeting.

Action D. Art 3 – Denine presented this textbook which was reviewed at the February meeting.

Action E. Ceramics – Denine presented this textbook which was reviewed at the February meeting.

With no questions, Roger motioned to approve these items V(A) through V(E) and Jeana seconded the motion. These items were unanimously approved and will be forwarded to the Board for approval..

Tabled ***Tabled Textbooks***

- *Honors World History – Revious-Uhlik, Caudillo (September, 2011)*

VI. **Discussion/Reports**

Discuss A. Benchmarks — Bill is in the process of meeting with principals for the latest six-week testing results. Jeana noted that benchmark procedure protocol needs to be addressed. If teachers have a problem with a test question at test time, she recommends they let the test ride and make a change from the grading end of it and not make last minute changes to the test questions. Bill agrees with this protocol.

Discuss B. Pacing Guides — Bill noted that blueprints are progressing, including those working with Intel-Assess. Discussion ensued on pacing guide form and questions regarding how the process could be improved so that it could be more user-friendly to teachers. Bill said he would work with staff on this. Jeana requested that Gaynl Potter have access to the English Intel-Assess so that she can work with Kristy. Members suggest that release time for staff to meet with Kristi would also be helpful with the process. Math is

using their GRA day to access the blueprints and are moving forward much quicker and smoother. English could use some time to dedicate to this process. Bill noted we are looking at using some summer paid days at the end of the school year to accomplish this task. Myndi feels the facilitators need to be one of the experts on Intel-Assess and shared her concern. Bill noted we must start the year fully prepared and thanked members for their feedback. He noted we have a presentation set up for March 24 with Illuminate Ed as another option for DataWise. Jeana suggested previewing EduSoft also. Bill noted we will preview other programs before making a decision. A priority will be to have existing benchmarks rolled over to the new system so that no data is lost.

Discuss C. Feeder School Articulation Update — Nothing to report.

Discuss D. Gail Robinette and Associates — Nothing to report.

Discuss E. Writing Partnership

a. Cadre 1: Jeana shared they continue to work with curriculum guides and integrating the writing tasks and prompts they have been developing with SJVWP.
b. Cadre 2: Nothing to report.
c. Cadre 3: Denine shared this week's meeting went well with all engaged on incorporating vocabulary and integrating pictures. They have mini conferences scheduled for April.

Discuss F. Professional Development — Fishbough

a. 2011-12 PD: Bill shared we are still looking at the SALT program. Ward noted we have budgets with funding that must be spent and that professional development is a good way to do this. Myndi noted the teaching staff could use a motivational spark at the August workshop days and feels the teaching body should have some input into PD development. She noted that the perception was that our February PD day was put together during the last days. Bill noted that we often hear teachers want more time to catch up on curriculum related tasks and the February PD day accomplished that.

Discuss G. AP Testing — Bobby noted that they had 400 in attendance for their AP Parent Night. He has shared the AP contract he developed with both SP and HH, where he tried to address the problems we have had in the past. He has received positive feedback from parents and teachers. HW's AP contracts are due back from parents by tomorrow, which will allow them to be scheduled in a 2011-12 AP course. Parents will be notified if their student has been accepted as an AP student. In addition, students will receive a withdrawal grade at any point of dropping out of an AP class, so he stressed that students must be sure of the commitment they have made. His goal is to keep students more serious about the courses they are taking and to avoid those students requesting to transfer out during second semester. Bill noted that as we build the master schedule, we will look into AP courses with low class sizes. Discussed ensued.

VII. Department Updates

- English – Jeana questioned the closed session item on the last board meeting regarding reduction in work force relative to one full time English teacher, as we will grow by an English position at SP. It was noted that HW's enrollment has decreased by about 400 students in the past two years; therefore, SP's position could be filled by an existing teacher. Bill noted that the master scheduling has not yet been completed and that during these tough economic times, we must ensure we are being fiscally prudent. Therefore, notice was given for these reasons and he stated we do not anticipate any new English positions district-wide. Jeana questioned the benefit of our Read180 program, noting we do not have any hard data to support that students are more successful on CST testing because of this course. She proposes a English 1 block class where students would receive English credit and receive full on target instruction in English. She would like permission to pilot this at HHS. Bobby noted he has researched the block Algebra I classes and asks if our students wouldn't be more successful if we dropped that second period of math support and instead lowered our Algebra I class size. Bill noted we have evolved to a difference place and will need to evaluate all of our support programs to ensure they are working for our students. Jeana believes Academic Literature does

accomplish the goals it was intended to. Ward shared he agrees that some of the programs we have developed over the past several years may not be working well for us at this time, as the programs were developed on the strengths of staff members that may have retired or moved on. Bill stressed that it does not matter what program we use, as it cannot replace good teaching. Jeana inquired about the discussion from last month regarding purchasing replacement English 3 textbooks as supplemental materials. Ward noted he did research this and that the Williams Act stipulates that we will need a book for every student and he does not see how we can get around this, unless we revise our curriculum guides to support our novels as our textbooks. Jeana requested a list of incoming special education students to use for scheduling purposes and Ward noted we would get that out as soon as possible.

- Visual & Performing Arts –Denine noted that the Youth Art Show is currently on display in Fresno with both HH and HW students winning awards. The drama department will be presenting The Little Shop of Horrors in March and the Annual Art Show will be held the first week of May. The Art Club is selling tickets for a floral arrangement to be sent to your desk once a month for a year from Gonsalves-Fasso Nursery for $20.
- CTE – Brian shared they are revising the leadership components of the last few guides that will be ready for the April meeting. He noted that while the leadership component may not have been written in the guides, it is a component that has always been taught. They are also trying to come up with new strategies for the Pay to Play issues. Staff is working on the Five Year Plan, Perkins Application and with Tech Prep Teams. Ag Education had a student elected to a regional office. Competition season has begun for the spring teams and students are also gearing up for the fair, with all three sites involved. Renee noted the SkillsUSA teams had several winning students at the regional level and they are gearing up for State competition. Tech prep is March 31.
- Library – Carol noted they finished up the CYM program. She will be attending a conference in Fresno this Friday.
- Site Administration
  - Roger shared that students seem to be engaged in the CAHSEE testing. They have Academic Awards scheduled for next week, with 36 scheduled to be awarded.
  - Bobby – Their CAHSEE testing seemed to have a very good environment. Every 15 Minutes began this morning, with the assembly scheduled for tomorrow morning. He is trying to improve the master scheduling system by requesting lists of students qualifying for specific courses from teachers so that they have the least amount of conflicts that is possible. Myndi noted that all students took the same test version of the math CAHSEE and felt they caught on immediately—discussion ensued.
- District Administration
  - Ward noted HR has two instructional aide positions open, along with a music teacher position at SP. He is preparing for the Title III Year 4 Improvement visit scheduled in April that addresses our EL students, along with continued work on the Perkins Application, Migrant Application, and our CPM visit scheduled in May.
  - Cheryl noted the deadline for getting the tax extension on the June ballot is today; however, the Governor has already granted an extension and is working on compromises. If the tax extension makes it on the ballot and is approved, our budget cuts would be minimal. We are waiting to see what happens. She also noted that the last workshop she attended on Pay to Play Student Fees stated that basically you need to work off of the premise that you cannot charge a student for anything. She did note that you can take the approach of asking students to voluntarily pay, but cannot deny them if they do not wish to do so.
  - Bill noted we are advertising the SPED/Migrant/EL/HNC Administrator position for the 2011-2012 school year.

The meeting was adjourned at 1:20 p.m.

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April 14, 2011
May 12, 2011

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Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.	COURSE NAME:	ARCHITECTURAL DRAWING
	Grade Level:	10-12
	Prerequisite:	Mechanical Drawing, Passed Algebra 1
	Duration:	2 Semesters
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	College of Sequoias
	Text – Board Adoption:	
	Textbook Name:	*Architecture residential drawing and design; Clois E. Kicklighter*,
	Publisher:	*Goodheart Wilcox*
	Publication Year/Edition:	*1973,1976, 1979, 1981, 1984,1990, 1995*
	ISBN – Student Text:	
	ISBN – Teacher Text:	

II. COURSE DESCRIPTION

Architectural drawing is a course which incorporates the basic principles and techniques of architectural drafting and design. During the course, the students produce a complete set of plans for a residence.

III. CENTRAL INTELLECTUAL PURPOSE

Communications

Reading

Comprehension as shown though class discussions, writing exercises and drawings in a variety of genres, including essay, short reports and different drawings.

Writing

Instruction/review/practice of drawings and short reports on design.
Analysis of units of mechanical drawing text.

Speaking

Class/group discussion of mechanical drawing practices and design concepts. Oral presentations of design concept for final project.

Critical Thinking/Problem Solving

Comprehension of architectural drawing practices and design solving, ability to recognize and analyze as drafting concept and or design solution, solution set-up, drawing and design methods, and problem solving

solution strategies.

Research

Using various sources of information from classroom references, school library, and computer network.

Technology

Students will demonstrate proficiency with available classroom technology to complete assigned mechanical drawing and design projects.

Ethics

Students will demonstrate personal, social, and civic responsibility while working in the classroom.

IV. CONTENT/TIMELINE/ PERFORMANCE STANDARDS

1. Letter in the approved drafting style
2. Identify and use properly the common drafting tools
3. Draw problems selected by instructor in orthographic projection, three methods of pictorial drawings, layout problems, working drawings, and section drawings
4. Use a drafting machine in the drawing of plates.
5. Read the protractor head of the drafting machine to the nearest minute
6. Identify nine of nine common lines used in drafting (border, object, hidden, section, extension, dimension, construction, center and cutting plane.
7. Prepare floor plans, electrical plans, elevations, plot plans, detail drawings, charts, and schedules for the building of a single family dwelling and for multi-family dwellings.
8. Execute drawings in pencil technique, however, some drawings may be prepared in ink
9. Research careers related to Architecture and also develop leadership skills

SPECIAL NOTE: *All **BOLD** state standards are **CALIFORNIA HS EXIT EXAM** standards.*

The activities listed correlate with the California State Content standards for [insert name].

FIRST SEMESTER

Weeks 1-3

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Orientation/Review

A. Introduction to class
B. Math competency test
C. Review types of lines and technique for drawing them
D. Review basic geometric drawing technique

Key Activities

A. Math competency test and worksheets
B. Line review plates
C. Review basic geometric drawing techniques

Drafting Technology Standards

- **Standard 3: Care and Use of Tools and Equipment**
  Students will understand various tools , equipment, media, and materials used in all fields of draftingand understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.
- **Standard 4: Drafting Measurement**
  Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.
- **Standard 17: Applied Geometry:**
  Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

- **2.4** Synthesize content; paraphrase and connect ideas.

Geometry

- **16.0** Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
- **22.0** Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Algebra

- **3.0** Students solve equations and inequalities involving absolute values.

Number sense

- **2.0** Students calculate and solve problems involving addition, subtraction, multiplication, and division.
- **2.1** Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why

a particular operation was used for a given situation.

- **2.4** Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Week 4-5

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Career Planning and Management

Students will complete a career research project demonstrating their knowledge of career qualifications. Students will complete job applications and undergo a mock interview that will demonstrate their job readiness skills.

Leadership and Teamwork

Students will complete a research project demonstrating their understanding of student-led organizations and their influence on student leadership. Students demonstrate leadership skills by competing as teams in shop activities.

Foundation Standard 3.0: Students understand how to make effective decisions, use career information, and manage personal career plans.

Foundation Standard 3.1: Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.

Foundation Standard 9.2: Understand the ways in which preprofessional associations, such as SkillsUSA, and competitive career development activities enhance academic skills, promote career choices, and contribute to employability

Week 6-8

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Symbols

A. Bathroom Fixtures (page 81)
B. Plot plan symbols (page 155)
C. Foundation plan symbols (page 183)
D. Door symbols (page 227)
E. Window symbols (page 223)
F. Building materials symbols (page 287)
G. Electrical plan symbols (page 344)

Key Activities

A. Students will draw plates from each of the above areas using the correct symbols.

Drafting Technology Standards

- S**tandard 24: Architectural Drawing Procedures**
  Students will understand, select, and use professional architectural drawing procedures that are consistent with current industrial standards.
- **Standard 3: Care and Use of Tools and Equipment**
  Students will understand various tools, equipment, media, and materials used in all fields of draftingand understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.
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Reading

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Geometry

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Algebra

- **3.0** Students solve equations and inequalities involving absolute values.

Number sense

- **2.0** Students calculate and solve problems involving addition, subtraction, multiplication, and division.
- **2.1** Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
- **2.4** Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions

Weeks 9-10

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Area planning and room design

A. Basic house design (chapter 2)
B. Sleeping area (chapter 5)
C. Living Room (chapter 6)
D. Service area (chapter 7)

Key Activities

A. Students will read and answer questions on each area.
B. Students will be given test on comprehension of specific reading.
C. Students will sketch and diagram a residence using the information they have learned.

Drafting Technology Standards

- S**tandard 24: Architectural Drawing Procedures**
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Reading

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Geometry

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Weeks 11-15

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Floor Plan (chapter 16)

A. Location and size of walls
B. Location and size of doors and windows
C. Cabinet, Appliances, and Permanent Fixtures
D. Dimensioning
E. Scale and sheet recognition

Key Activities

A. Students will produce a floor plan using proper architectural technique

Drafting Technology Standards

- **Standard 25: Architectural Working Drawings**
  Students will understand and develop architectural working drawings, using current industry standards.
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Reading

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Geometry

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Algebra

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Weeks 16-18

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Electrical Plan (chapter 20)

A. Electrical symbols
B. Switches
C. Outlets
D. Lighting

Key Activities

A. The students will produce an electrical plan to the current industry standards.

Drafting Technology Standards

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SECOND SEMESTER

Weeks 1-3

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Roofing Plan (chapter 17)

A. Roof types
B. Traditional frame roofing
C. Trusses

Key Activities

A. Students will produce a roofing plan using current industry standards.

Drafting Technology Standards

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Weeks 4-6

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- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Elevation Plans (chapter 18)

A. Elevation identification
B. Grade line, floors and ceiling
C. Walls, windows and doors
D. Dimensions notes and symbols

Key Activities

A. Students will develop exterior elevations of the front, back , and both sides of residence.
B. Students will develop a section view of the interior elevation of a residence.

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- **2.0** Students calculate and solve problems involving addition, subtraction, multiplication, and division.
- **2.1** Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
- **2.4** Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions

Weeks 7- 8

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Plot Plan

A. Property lines
B. Contour lines
C. Topographical features
D. Location of structure

Key Activities

A. Students will produce a plot plan to current industry standards.

Drafting Technology Standards

- **Standard 25: Architectural Working Drawings**
  Students will understand and develop architectural working drawings, using current industry standards.
- **Standard 24: Architectural Drawing Procedures**
  Students will understand, select, and use professional architectural drawing procedures that are consistent with current industrial standards.
- **Standard 3: Care and Use of Tools and Equipment**
  Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.
- **Standard 4: Drafting Measurement**
  Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.
- **Standard 17: Applied Geometry:**
  Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

- **2.4** Synthesize content; paraphrase and connect ideas.

Geometry

- **16.0** Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
- **22.0** Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Algebra

- **3.0** Students solve equations and inequalities involving absolute values.

Number sense

- **2.0** Students calculate and solve problems involving addition, subtraction, multiplication, and division.
- **2.1** Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
- **2.4** Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions

Weeks 9-12

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Foundation Plan

A. Footing, foundation and concrete
B. Footing shape
C. Slab foundations
D. Detail drawings

Key Activities
Students will produce a foundation plan with details to current industry standards.

Drafting Technology Standards

- **Standard 25: Architectural Working Drawings**
  Students will understand and develop architectural working drawings, using current industry standards.
- **Standard 24: Architectural Drawing Procedures**
  Students will understand, select, and use professional architectural drawing procedures that are consistent with current industrial standards.
- **Standard 3: Care and Use of Tools and Equipment**
  Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.
- **Standard 4: Drafting Measurement**
  Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.
- **Standard 17: Applied Geometry:**
  Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

- **2.4** Synthesize content; paraphrase and connect ideas.

Geometry

- **16.0** Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
- **22.0** Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Algebra

- **3.0** Students solve equations and inequalities involving absolute values.

Number sense

- **2.0** Students calculate and solve problems involving addition, subtraction, multiplication, and division.
- **2.1** Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
- **2.4** Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions

Weeks 13-15

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Building Details

A. Foundation and footing detail
B. Window and door detail
C. Stair detail
D. Roofing detail
E. Wall section detail

Key Activities

A. Students will understand and draw the listed details to the current industry standards.

Drafting Technology Standards

- **Standard 25: Architectural Working Drawings**
  Students will understand and develop architectural working drawings, using current industry standards.
- **Standard 24: Architectural Drawing Procedures**
  Students will understand, select, and use professional architectural drawing procedures that are consistent with current industrial standards.
- **Standard 3: Care and Use of Tools and Equipment**
  Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.
- **Standard 4: Drafting Measurement**
  Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.
- **Standard 17: Applied Geometry:**
  Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

- **2.4** Synthesize content; paraphrase and connect ideas.

Geometry

- **16.0** Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
- **22.0** Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Algebra

- **3.0** Students solve equations and inequalities involving absolute values.

Number sense

- **2.0** Students calculate and solve problems involving addition, subtraction, multiplication, and division.
- **2.1** Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
- **2.4** Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions

Weeks 16-18

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Presentaion Drawing

A. Rendered Elevation
B. Exterior perspective

Key Activities

A. Student will produce a rendered elevation
B. Student will present their set of plans to the class

Drafting Technology Standards

- **Standard 25: Architectural Working Drawings**
  Students will understand and develop architectural working drawings, using current industry standards.
- **Standard 24: Architectural Drawing Procedures**
  Students will understand, select, and use professional architectural drawing procedures that are consistent with current industrial standards.
- **Standard 3: Care and Use of Tools and Equipment**
  Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.
- **Standard 4: Drafting Measurement**
  Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.
- **Standard 17: Applied Geometry:**
  Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

- **2.4** Synthesize content; paraphrase and connect ideas.

Geometry

- **16.0** Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
- **22.0** Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Algebra

- **3.0** Students solve equations and inequalities involving absolute values.

Number sense

- **2.0** Students calculate and solve problems involving addition, subtraction, multiplication, and division.
- **2.1** Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
- **2.4** Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions

V. STUDENT ASSESSMENT

- A variety of authentic assessments will be used such as portfolios, student presentations, drawings, and rubric scoring. Quizzes, test, participation, and mentor evaluations will be used.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS / SOFTWARE

The designated textbooks, materials, and technologies meet the state standards for this content area.

A. Primary text: *Architecture residential drawing and design; Clois E. Kicklighter,*

Goodheart Wilcox, 1973,1976, 1979, 1981, 1984,1990, 1995

E. Teacher/student resources: Several text and books that teacher owns

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF [*Insert discipline*] CONTENT STANDARDS FOR ALL LEARNING STYLES

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence (learning styles).

LINGUISTIC LEARNER

oral reports
essays

LOGICAL/MATHEMATICAL LEARNER

graphic organizers
timeline
prediction exercises
models

SPATIAL LEARNER

drawings
maps and flow charts

BODILY-KINESTHETIC LEARNER

demonstration speeches
experiments

INTERPERSONAL LEARNER

discussions
cooperative and collaborative projects
peer coaching
conducting interviews

INTRAPERSONAL LEARNER

observations

Hanford Joint Union High School District

I.

I.	COURSE NAME:	Introduction to Industrial Processes
	Grade Level:	9-12
	Prerequisite:	none
	Duration:	2 Semesters
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	n/a
	Text – Board Adoption:	
	Textbook Name:	n/a
	Publisher:	
	Publication Year/Edition:	
	ISBN – Student Text:	
	ISBN – Teacher Text:	

II. Course Description

Introduction to Industrial Processes is a basic course in Industrial Arts Pathway. The students learn the proper use and names of the tools used in the industry. Students will rotate every 9 weeks to learn the basics mechanics of metal, wood, mechanical drawing (drafting), and small engines or basic principles and applications of electricity. This course prepares the student for an area of emphasis in one of the Industrial Arts Sectors.

III. Central Intellectual Purpose

Communications:

Reading: comprehension as shown through class discussions and written exercises in a variety of genres, including essay, short reports, and safety entrance test

Writing: instruction/review/practice of writing Industrial manufacturing facts and safety rules. Analysis of units in text books of each area of emphasis.

Speaking: Class/group discussion of machine operations and safety procedures. Oral presentations in each area.

Critical Thinking/Problem Solving

Comprehension of safety rules and manufacturing practices, ability to recognize and analyze a manufacturing need, solution set-up, attack methods, and manufacturing solution strategies.

Research

Utilizing various sources of information from classroom references, school library, and computer network.

Technology

Students will demonstrate proficiency with available classroom technology to complete assigned shop laboratory projects.

Ethics

Students will demonstrate personal, social, and civic responsibility while working in the laboratory.

IV. PERFORMANCE INDICATORS/EXPECTATIONS

1. Pass safety test
2. Identify, select, and safely use shop tools and machines.
3. Identify, select and use materials properly
4. Interpret prints and apply information to basic planning and layout process.
5. Demonstrate ability to apply math skills to solve problems in manufacturing technology.
6. Draw simple objects in two views
7. Execute drawings using the following types of lines: border, object or visible lines, hidden, centerlines, extension and dimension lines.
8. Select and safely perform finishing processes in a responsible manner.
9. Communicate skills by reading, presenting oral and written information, and listening to and following directions while performing Industrial Technology experiences.

V. COURSE OUTLINE/TIIMELINE (SEQUENCE)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

WOOD – (9 weeks)

I. *Safety and First Aid*

A. Safe work habits
B. Accident prevention
C. Potential hazard identification
D. Handling emergencies
E. OSHA
F. Maintaining a clean shop

Key Activities

- 6 Safety Tests

Standard 6: Safety
Students will understand the value and necessity of practicing occupational safety in the construction industry. They will demonstrate content proficiency by:
- *passing required safety tests*
- *demonstrating the safe use of hand tools and power tools*
- *explaining the roles and responsibilities of the various governmental safety agencies*
- *using safe work practices*
- *receiving exposure/training in CPR and basic first aid*

Grades 9-10 ELA
2.0 Writing Applications
2.3 Write expository compositions
1.0 Written and Oral Language Conventions
1.3 Demonstrate an understanding of proper usage and grammar
2.0 Reading Comprehension
2.4 Synthesize content; paraphrase and connect ideas

II. *Wood Tools and Machines*

A. Identification and Operation
i. Saws
ii. Drills
iii. Sanders
iv. Shapers/routers

B. Hand Tools
C. Safety Practices
a. Proper storage techniques

Key Activities

- Individual student demonstration of knowledge and use of machines and tools, and safety practices related to each.

Standard 2: Hand Tools
Students will understand safe and appropriate use of hand tools common to the construction industry (hammers, pliers, saws, wrenches, etc.). They will demonstrate content proficiency by:
- *identifying tools commonly used in specific trades*

- *correctly using tools in their intended application*
- *demonstrating basic care and maintenance of hand tools*

Standard 122: Carpentry Safety

Students will understand the importance of safety and safe work practices in carpentry (involving ladders and scaffolds, fire safety, tools and machines, etc.). They will demonstrate content proficiency by:

- *demonstrating knowledge of carpentry safety and safe work practices*
- *exhibiting a positive attitude toward safety*
- *demonstrating the ability to use tools, machines, and materials safely in carpentry activities*

Standard 123: Carpentry Tools and Machines

Students will understand the names, functions, and safe uses of the tools and machines used in carpentry (hammers, routers, radial arm saws, etc.). They will demonstrate content proficiency by:

- *identifying the tools and machines used by the carpenter*
- *using the tools and machines safely and accurately in carpentry activities*

Algebra 1

- ***3.0 Students solve equations and inequalities involving absolute values***

Grade 6 Number sense

- *2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division:*
- *2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions*

Grade 5 Number sense

- *2.1 Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation*

Geometry

- *16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.*

Grades 9-10 ELA

- ***2.0 Writing Applications***
  2.3 Write expository compositions
- ***Written and Oral Language Conventions***
  1.3 Demonstrate an understanding of proper usage and grammar.
- ***2.0 Reading Comprehension***
  2.4 Synthesize content; paraphrase and connect ideas

III. Production

A. Beginning Level Wood Project
   i. Multiple joints used
   ii. Multiple machines used
   iii. Multiple hand tools used
B. Work values/ethics

Key Activities:

- Construct a heart box

Standard 5: Construction Project Phases/Systems

Students will understand the variety of building phases/systems used in construction projects. They will demonstrate content proficiency by:

- *developing a building plan utilizing given systems common to construction projects*
- *using tools, processes, and materials appropriate to architectural design and development of construction projects*

- *using tools, processes, and materials appropriate to site development in construction projects*
- *using tools, processes, and materials appropriate to structural systems in construction projects*
- *using tools, processes, and materials appropriate to electrical systems in construction projects*
- *using tools, processes, and materials appropriate to mechanical systems in construction projects*
- *using tools, processes, and materials appropriate to finish systems in construction projects*

Standard 125: Carpentry Activities

Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing, etc.) They will demonstrate content proficiency by:

- *identifying procedures, techniques, and processes used in carpentry*
- *demonstrating the ability to lay out, form, frame, and finish carpentry project*

VI. Finishing

A. Procedures and techniques of finishing.
B. Tools
C. Materials

Key Activities

- Students will demonstrate proper techniques of finishing on their projects

Standard 125: Carpentry Activities

Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing, etc.) They will demonstrate content proficiency by:

- *identifying procedures, techniques, and processes used in carpentry*
- *demonstrating the ability to lay out, form, frame, and finish carpentry projects*

V. Careers in Wood

Key Activities:

- Explore various careers in building trades and construction
- Develop a high school 4 year plan
- List the professional organizations and industry associations
- Leadership and Teamwork

Students will complete a research project demonstrating their understanding of student-led organizations and their influence on student leadership. Students demonstrate leadership skills by competing as teams in shop activities.

Standard 3.0 Career Planning and Management

Students understand how to make effective decisions, use career information, and manage personal career plans:

3.1 Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.

3.2 Understand the scope of career opportunities and know the requirements for education, training, and licensure.

3.3 Develop a career plan that is designed to reflect career interests, pathways, and postsecondary options.

3.4 Understand the role and function of professional organizations, industry associations, and organized labor in a productive society.
3.5 Understand the past, present, and future trends that affect careers, such as technological developments and societal trends, and the resulting need for lifelong learning.

Grades 9-10 ELA

- ***2.0 Writing Applications***
  2.3 Write expository compositions
- ***Written and Oral Language Conventions***
  1.3 Demonstrate an understanding of proper usage and grammar.
- ***2.0 Reading Comprehension***
  2.4 Synthesize content; paraphrase and connect ideas

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
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- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Mechanical Drawing (9 Weeks)

1. *Mathematic Skills*
   A. Measuring
   B. Review types of lines and technique for drawing them
   C. Review basic geometric drawing techniques

   Key Activities
   - Math competency worksheet
   - Line review plates
   - Geometric drawing plates

2. *Lettering*
   A. Technique
   B. Spacing of letter and words
   C. Vertical numbers

   Key Activities
   - Lettering practice worksheets
   - Lettering is an ongoing lesson that is practiced through out the year.

3. *Views of Objects*
   A. Orthographic Drawings
   B. Hidden and center lines

Key Activities

- Two view plates
- Three view plates
- Both two view and three view plates using hidden and center lines

Standard 3: Care and Use of Tools and Equipment

Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.

Standard 4: Drafting Measurement

Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of letting fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 7: Orthographic Drawing

Students will understand, identify, and correctly use the alphabet of lines. They will develop an object graphically, using appropriate projection techniques.

Standard 17: Applied Geometry:

Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design, and geometrically define objects and surfaces.

Reading

- ***2.4 Synthesize content; paraphrase and connect ideas***

Geometry

- *8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures*
- *11. 0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids..*
  12.0 Students find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems.
- *16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line*
- *17.0 Students prove theorems by using coordinate geometry including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.*
- *21.0 Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles*
- *22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections*

Algebra 1

- ***3.0 Students solve equations and inequalities involving absolute values***
- *16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.*

Grade 6 Number sense

- *2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division:*
- *2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions*

Grade 5 Number sense

- *2.1 Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation*

4. *Careers*

Key Activities:

- Explore various careers in Engineering and Design
- List the professional organizations and industry associations
- Career Interest Survey
- Leadership and Teamwork

Students will complete a research project demonstrating their understanding of student-led organizations and their influence on student leadership. Students demonstrate leadership skills by competing as teams in shop activities.

-

Standard 3.0 Career Planning and Management

Students understand how to make effective decisions, use career information, and manage personal career plans:

3.1 Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.

3.2 Understand the scope of career opportunities and know the requirements for education, training, and licensure.

3.3 Develop a career plan that is designed to reflect career interests, pathways, and postsecondary options.

3.4 Understand the role and function of professional organizations, industry associations, and organized labor in a productive society.

3.5 Understand the past, present, and future trends that affect careers, such as technological developments and societal trends, and the resulting need for lifelong learning.

Grades 9-10 ELA

- ***2.0 Writing Applications***
  2.3 Write expository compositions
- ***Written and Oral Language Conventions***
  1.3 Demonstrate an understanding of proper usage and grammar.
- ***2.0 Reading Comprehension***
  2.4 Synthesize content; paraphrase and connect ideas

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
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- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Metal (9 weeks)

1. *Shop Safety*

   A. Shop clean-up procedures
   B. Accident preventions
   C. Safe work habits
   D. Potential hazard identification
   E. Work values/ethics
   F. Tool and equipment safety
   G. Tool and equipment storage

Key Activities:

- Pass safety test (100% accuracy)
- Students will understand the importance of proper cleaning and storage of shop tools, the reporting of hazardous situations and safe practices to be employed with all the shops and machines
- Students will receive a shop safety tour of the shop.
- Students will receive numerous demonstrations, videos and films to illustrate the importance of shop safety.
- Students will participate and practice emergency drills to assess the student's performance in case of an accident.
- Students will develop a proper attitude towards work and avoid unsafe practices
- Students will take numerous written and practical safety tests for the safe operation of shop machinery and tools.
- Students will receive a tour of the shop and instructor will point out each cleaning task and its purpose. Students will understand how to clean the shop properly as directed by the instructor.
- Students and parents will sign written contracts wherein they agree to abide all the safety procedures of the shop.
- NOTE- Safety is an on-going unit.

Grades 9-10 ELA

- ***2.0 Reading Comprehension***
  2.4 Synthesize content; paraphrase and connect ideas

Industrial and Technology Performance Standard

6.8.1 Demonstrate the use of personal /group safety while working in a shop environment.

1.10 Tool use and safety Students will understand the operation principals of common tools and equipment used and will understand the principles of safety that apply to them.

1.10.3 Explain safety procedures in the use of hand and power tools.

2. Sheet Metal

A. Sheet Metal Safety
B. Sheet Metal Tools and machines
C. Sheet Metal Materials and Supplies

Key Activities:

- Students will learn about career opportunities, training, and educational requirements in sheet metal and construction technology.
- Students will understand safety procedures in the shop pertaining to sheet metal work.
- Students will understand the names, functions, and use of tools and machines.
- Students will know the names and properties, and appropriate use of the materials and supplies.
- Students will know the procedures, techniques, and process used in sheet metal construction

Industrial and Technology Performance Standard

156- Students will understand the importance of career planning (opportunities, training, and educational requirements, career ladder, and so forth) and know the careers that are available in sheet metal and construction technology. They will identify career opportunities in sheet metal and construction technology, identify an occupational interest, and develop a career plan.

157- Students will understand the importance of safety and safe work practices (use of protective clothing, handling materials, caution with tools and machines and so forth) in the sheet metal construction. They wil demonstrate knowledge of sheet metal safety and safe work practices. They will exhibit a positive attitude toward safety and demonstrate ability to use tools, machines and materials safely in sheet metal activities.

158- Students will understand the names, functions and safe uses of tools and machines (snips, brakes, spot welders, and so forth) used in sheet metal construction. They will identify the tools and machines used in working with sheet metal and safely and accurately use them in sheet metal activities.

160- Students will know the procedures, techniques, and processes used in sheet metal construction. (layout, cutting, bending, and so forth). They will identify procedures, techniques, and processes used and demonstrate ability to work with sheet metal in construction activities.

ELA- Grades 9-10

2.0 Writing Application

2.6 Write technical documents

a. Report logically and correctly

3. Careers

Key Activities:

- Career Awareness in the Manufacturing and Product Development
- List the professional organizations and industry associations
- Research opportunities for funding post graduate training and college (financial aid etc)

- Leadership and Teamwork

Students will complete a research project demonstrating their understanding of student-led organizations and their influence on student leadership. Students demonstrate leadership skills by competing as teams in shop activities.

3.0 Career Planning and Management
Students understand how to make effective decisions, use career information, and manage personal career plans:
3.1 Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.
3.2 Understand the scope of career opportunities and know the requirements for education, training, and licensure.
3.4 Understand the role and function of professional organizations, industry associations, and organized labor in a productive society.
3.5 Understand the past, present, and future trends that affect careers, such as technological developments and societal trends, and the resulting need for lifelong learning.
Grades 9-10 ELA
- ***2.0 Reading Comprehension***
  2.4 Synthesize content; paraphrase and connect ideas

SDAIE Instructional Strategies
- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Small Engines (9 weeks)

1. Safety
2. Hand tools
3. Work values/ethics
4. Ignition
5. 4 Stroke Principle
6. Lubrication
7. Careers

Key Activities
- Disassemble and reassemble a lawn mower
- Career Awareness in the Small Engine Repair, Automotive, and other Transportation fields
- Research post graduation opportunities

Grades 9-10 ELA

- ***2.0 Reading Comprehension***

  2.4 Synthesize content; paraphrase and connect ideas

Industrial Arts A2.0 Students understand the safe and appropriate use of tools, equipment, and work processes:

A2.1 Understand and use appropriate tools and equipment, such as wrenches, sockets, and pliers, to perform systems and component maintenance and repair operations.

A2.2 Use tools, equipment, and machines to safely measure, test, diagnose, and analyze components and systems (e.g., electrical and electronic circuits, alternating- and direct-current applications, fluid/hydraulic, and air/pneumatic systems).

Industrial Arts A6.0 Students understand the application, operation, maintenance and diagnosis of engines, including but not limited to two- and four-stroke and supporting subsystems:

A6.1 Perform general engine maintenance, diagnosis, service and repair in accordance with the industry standards such as Automotive Service Excellence, Automotive Technician Training Standards, the Equipment and Engine Training Council.

A6.2 Maintain, diagnose, service and repair lubrication and cooling systems.

A6.3 Understand how to maintain, diagnose, and repair computerized engine control systems and other engine-related systems.

A6.4 Maintain, diagnose, service and repair ignition, electronic and computerized engine controls and fuel management systems.

Industrial Arts 3.0 Career Planning and Management

Students understand how to make effective decisions, use career information, and manage personal career plans:

3.1 Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.

3.2 Understand the scope of career opportunities and know the requirements for education, training, and licensure.

V. STUDENT ASSESSMENT

A Variety of authentic assessments will be used such as portfolios, student presentations and projects, and rubric scoring. Quizzes, tests, participation, daily work grades, and mentor evaluations will also be used.

Basic Principles and Applications of Electricity, Sierra Pacific High School (9 weeks)

General Safety rules for Electricity and Electronics
Work values/ethics
Unit of Energy
Energy Conversion
Nature of Electric Charge
Current
Voltage
Resistance
Conductors

Basic Circuits, Laws, and Measurement
Circuit Components
Careers

Key Activities

- Study basic the atom and how it relates to electricity
- Construction and analysis of basic circuits
- Project
- Career awareness and understanding the scope of career opportunities and know the requirements for education, training and licensure

Grades 9-10 ELA

- ***2.0 Reading Comprehension***
  2.4 Synthesize content; paraphrase and connect ideas

Industrial and Technology Performance Standard

6.8.1 Demonstrate the use of personal /group safety while working in a shop environment.

1.10 Tool use and safety Students will understand the operation principals of common tools and equipment used and will understand the principles of safety that apply to them.

1.10.3 Explain safety procedures in the use of hand and power tools.

Industrial Arts 3.0 Career Planning and Management

Students understand how to make effective decisions, use career information, and manage personal career plans:

3.1 Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.

3.2 Understand the scope of career opportunities and know the requirements for education, training, and licensure.

V. STUDENT ASSESSMENT

A Variety of authentic assessments will be used such as portfolios, student presentations and projects, and rubric scoring. Quizzes, tests, participation, daily work grades, and mentor evaluations will also be used.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS / SOFTWARE

The designated textbooks, materials, and technologies meet the state standards for this content area.

A. Will use the primary textbooks of the Beginning Wood, Mechanical Drawing, Basic Principles and Application of Electricity:

- *Mechanical Drawing CAD-communications*; Twelfth edition, French/Svensen/Helsel/Urbanick, Glencoe, 1997
- Text: General Woodworking, 6th edition by Chris H. Groneman, McGrawHill, 1952, 1982
- *Basic Technical Drawing*; Spencer/Dygdon, Glencoe/McGraw-Hill, 1974, 1980
- A. Repp, Victor E. (1944) METAL WORK, TECHNOLOGY AND PRACTICE (9th Edition, New York, New York: Glencoe McGraw-Hill

- Electricity 1, Devices, Circuits, and Materials, by Thomas S. Kubala, Thomson-Delmar Learning 2006

B. Supplementary texts:
- Lincoln Electric (1995) WELDING GUIDE: Available from The Lincoln Electric Company, 22801 St. Clair Ave, Cleveland, Ohio 44117
- Electricity, Principles and Applications, by Richard Fowler, Glencoe McGraw-Hill, Sixth edition 2003

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF INDUSTRIAL AND TECHNOLOGY EDUCATION CONTENT STANDARDS FOR ALL LEARNING STYLES

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence (learning styles).

LINGUISTIC LEARNER
creative writing
oral reports
essays

LOGICAL/MATHEMATICAL LEARNER
graphic organizers
coded messages
models
computer project
science experiments

SPATIAL LEARNER
drawings
maps and flow charts

BODILY-KINESTHETIC LEARNER
experiments

INTERPERSONAL LEARNER
discussions
cooperative and collaborative projects
peer coaching
simulation activities

INTRAPERSONAL LEARNER
response journals/learning logs
observations

Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.	**COURSE NAME:**	**Mechanical Drawing**
	Grade Level:	9-12
	Prerequisite:	Algebra 1; IIP preferred
	Duration:	2 Semesters
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	
	Text – Board Adoption:	
	Textbook Name:	*Basic Technical Drawing*; Spencer/Dygdon, Glencoe/McGraw-Hill, 1974, 1980
	Publisher:	Glencoe/McGraw-Hill
	Publication Year/Edition:	1974, 1980
	ISBN – Student Text:	
	ISBN – Teacher Text:	

II. COURSE DESCRIPTION

This course introduces students to the use and care of drafting equipment, sketching, orthographic projection, isometric and oblique drawings, and border and center draw. Students will learn applied descriptive geometry and line dimensions.

III. CENTRAL INTELLECTUAL PURPOSE

Communications

Reading

Comprehension as shown through class discussions, writing exercises and drawings in a variety of genres, including essay, short reports, and different drawings.

Writing

Instruction/review/practice of drawings and short reports on design.
Analysis of units of mechanical drawing text.

Speaking

Class/group discussion of mechanical drawing practices and design concepts. Oral presentations of design concept for final project.

Critical Thinking/Problem Solving

Comprehension of mechanical drawing practices and design solving, ability to recognize and analyze as drafting concept and or design solution, solution set-up, drawing and design methods, and problem solving solution strategies.

Research

Using various sources of information from classroom references, school library, and computer network.

Technology

Students will demonstrate proficiency with available classroom technology to complete assigned mechanical drawing and design projects.

Ethics

Students will demonstrate personal, social, and civic responsibility while working in the classroom

IV. CONTENT/TIMELINE/ PERFORMANCE STANDARDS

1. Letter in the approved drafting style.
2. Identify and use properly the common drafting tools
3. Draw problems selected by the instructor in orthographic, projection, threads and fasteners drawing, section drawing, working drawing and three types of pictorial drawings.
4. Use drafting machine in the drawing of plates.
5. Read a protractor head of the drafting machine to the closest minute.
6. Identify nine of nine common lines used in drafting (border, object, hidden, section, extension, dimension, construction, center and cutting plane.
7. Prepare professional quality drawings in orthographic projection, threads and fasteners, sections, working and pictorial drawings.
8. Execute drawings in pencil techniques; however, some drawings may be prepared in ink.

FIRST SEMESTER

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: Scoring rubric for drawing

Week 1-3

Orientation (Chapter 1, 3, & 5)

A. Introduction to class
B. Math competency test
C. Types of lines and technique for drawing them
D. Basic geometric drawing technique

Key Activities

- Math competency test and worksheets
- Line review plates
- Basic geometric drawing techniques

Drafting Technology Standards

Standard 3: Care and Use of Tools and Equipment
Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.

Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 17: Applied Geometry
Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

2.4 Synthesize content; paraphrase and connect ideas

Grades 8-12 Geometry

16.0 Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point

off the line.

22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Grades 8-12 Algebra

3.0 Students solve equations and inequalities involving absolute values.

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Week 4

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: worksheets and demonstration

Career Planning and Management

Students will complete a career research project demonstrating their knowledge of career qualifications. Students will complete job applications and undergo a mock interview that will demonstrate their job readiness skills.

Leadership and Teamwork

Students will complete a research project demonstrating their understanding of student-led organizations and their influence on student leadership. Students demonstrate leadership skills by competing as teams in shop activities.

Foundation Standard 3.0: Students understand how to make effective decisions, use career information, and manage personal career plans.

Foundation Standard 3.1: Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.

Foundation Standard 9.2: Understand the ways in which preprofessional associations, such as SkillsUSA, and competitive career development activities enhance academic skills, promote career choices, and contribute to employability

Week 5

Sketching (Chapter 2)

A. Freehand lines
B. Straight lines
C. Sketching views

Key Activities

- Sketching detailed problems assigned by the teacher

Drafting Technology Standards

Standard 6: Sketching

Students will understand the reason for applying various types of orthographic and pictorial drawings, axonometric, oblique, and perspective drawings. They will produce well proportioned and easily understood two and three dimensional sketches

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Geometry

16.0 Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

Week 6

Lettering (Chapter 4)

A. Technique
B. Spacing of letters and words
C. Vertical numbers

Key Activities

- Lettering practice worksheets
- Lettering is ongoing lesson that is practiced through out the course.

Drafting Technology Standards

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Reading

2.4 Synthesize content; paraphrase and connect ideas.

Week 7-13

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: Scoring rubric for drawing

View of Objects (Chapter 6)

A. Orthographic drawings
B. Hidden and center lines

Key Activities

- Two view plates
- Three view plates
- Both two view and three view plates using hidden and center lines

Drafting Technology Standards

Standard 7: Orthographic Drawing

Students will understand, identify, and correctly use the alphabet of lines. They will develop and object graphically, using appropriate projection techniques.

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Grades 8-12 Geometry

Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Reading

2.4 Synthesize content; paraphrase and connect ideas.

Week 14-18

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: Scoring rubric for drawing

Dimensioning (Chapter 9)

A. Placement
B. Dimension figures
C. Arrowheads
D. Notes

Key Activities

- Students draw orthographic plates and dimension.
- Dimensioning will be ongoing lesson throughout the course

Drafting Technology Standards

Standard 8: Dimension Practices
Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Standard 5: Lettering
Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

Reading

2.4 Synthesize content; paraphrase and connect ideas.

SECOND SEMESTER

Week 1-4

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: Scoring rubric for drawing

Thread and Fasteners (Chapter 14)

A. Unified
B. Acme
C. American Standard
D. Symbols
E. Bolt and nut

Key Activities

- Students will produce plated of different types of threads, as well as, their symbols
- Students will continue to use these skill throughout the rest of this course

Drafting Technology Standards

Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering
Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 8: Dimension Practices
Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Standard 17: Applied Geometry
Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.
21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Week 5-10

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: Scoring rubric for drawing

Sectional Views (Chapter 11)

A. Full section
B. Broken-out section
C. Revolved section
D. Removed Section
E. Off-set section
F. Ribs and spokes in section
G. Breaks

Key Activities

- Students will draw plates of each type of sectional view.

Drafting Technology Standards

Standard 9: Sectioning
Students will understand section view applications and functions. They will incorporate section views and appropriate cutting planes to clarify hidden features or object drawings.
Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.
Standard 5: Lettering
Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.
Standard 8: Dimension Practices
Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

9.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.
11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.
12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems
16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.
21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Weeks 11-14

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: Scoring rubric for drawing

Working Drawings (Chapter 15)

A. Industrial Drafting
B. Standards
C. Title strip and parts list
D. General Assembly

Key Activities

- Students will produce a set of working drawings

Drafting Technology Standards

Standard 21: Working and Production Drawings
Students will understand the relationship of detail drawings, assembled drawings, and working drawings. Students will complete the various set of working drawings, using appropriate line work, symbols, and current standards.
Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields.
Students will measure to the degree of accuracy required in a variety of particular drafting applications.
Standard 5: Lettering
Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.
Standard 8: Dimension Practices
Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.
2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.
11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.
12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems
16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.
21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Weeks 15-18

SDAIE Instructional Strategies

- Vocabulary & Language Development: Realia, Manipulatives, used to develop vocabulary
- Explicit Instruction: Lecture, demonstration
- Guided Instruction: Self-directed learning, hands-on
- Metacognition & Authentic Assessment: Scoring rubric for drawing

Pictorial Drawings (Chapter 16)

A. Isometric drawings
B. Oblique drawing
C. Two-point perspective drawing

Key Activities

- Students will create plates using isometric, oblique, and two-point perspective techniques

Drafting Technology Standards

Standard 10: Pictorial Drawing

Students will understand the structure, components, types, sequential construction methods, and applications of pictorial assemblies. They will draw objects accurately in pictorial format.

Standard 4: Drafting Measurement

Students will understand measuring systems and how measuring instruments are used in drafting and related fields.

Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 8: Dimension Practices

Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

V. STUDENT ASSESSMENT

- A variety of authentic assessments will be used such as portfolios, student presentations, drawings and rubric scoring. Quizzes, test, participation, and mentor evaluations will be used.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS / SOFTWARE

The designated textbooks, materials, and technologies meet the state standards for this content area.

A. Primary text: *Basic Technical Drawing*; Spencer/Dygdon, Glencoe/McGraw-Hill, 1974, 1980

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF INDUSTRIAL AND TECHNOLOGY CONTENT STANDARDS FOR ALL LEARNING STYLES

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence (learning styles).

LINGUISTIC LEARNER
- oral reports
- essays
- storytelling

LOGICAL/MATHEMATICAL LEARNER
- graphic organizers
- prediction exercises
- models

SPATIAL LEARNER
- drawings
- maps
- displays

BODILY-KINESTHETIC LEARNER
- demonstration speeches
- experiments
- simulation activities

INTRAPERSONAL LEARNER
- observations

INTERPERSONAL LEARNER
- discussions
- cooperative and collaborative projects
- peer coaching
- conducting interviews

Hanford Joint Union High School
DISTRICT INSTRUCTIONAL GUIDE

I.	**COURSE NAME:**	General Auto
	Grade Level:	9-12, 10-12 (HW)
	Prerequisite:	IIP (HW)
	Duration:	One Year (2 semesters)
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	n/a
	Text – Board Adoption:	1999-2000
	Textbook Name:	Automotive Service Inspection Maintenance Repair
	Publisher:	Thomson Delmar Learning
	Publication Year/Edition:	2004 2nd Edition
	ISBN – Student Text:	1-40181-234-1
	ISBN – Teacher Text:	

II. COURSE DESCRIPTION

General Auto is a first year course in the broad-based Transportation and Energy Technology program. Emphasis is on safe work habits, tool identification, theory of operation, automobile components, and good working and cleanup habits.

III. CENTRAL INTELLECTUAL PURPOSE

Communications: Students practice communications by reading, writing, listening, speaking, and using visual and non-verbal skills in their daily lessons in the classroom and lab.

Critical Thinking / Problem Solving: Students practice these skills while diagnosing problems with cars and machines, determining the most efficient way to repair the problems and calculating the cost. Many scientific principles are used, including force, work, rate, resistance, energy, power, and momentum.

Research: Students learn and practice research skills in location of specifications, use of flow charts, component location & descriptions, procedures for doing repairs, component costs, and labor rates. Tools used for research include textbooks, magazines, service bulletins, manuals, charts, and computer software.

Technology: Students use technology when doing projects that require the use of many different kinds of machines. Metal fabricating machines such as belt disc sanders, mills, lathes, and welders are used to repair and fabricate components for automobiles. Students use cleaning machines such as high-pressure washers, glass bead blasters, hot

dip tanks, and push brooms. When painting cars, students use welders, sanders, grinders, paint guns, and gun washers. Students also use electronic and computer technology when diagnosing drivability problems, such as onboard diagnostic computers, scanners, multimeters and volt/amp testers. In addition, they learn how computer-aided drafting and robotics are used to design and build cars.

Ethics: Students demonstrate knowledge of and adherence to school, classroom, lab, and traffic rules, with particular emphasis on the honesty policy and respect for self and others. Emphasis is also placed on attentiveness during lectures and lab demonstrations, constructive use of lab time, and diligence in daily work on projects. Students learn to work together to prevent vandalism and theft in the lab.

IV. CONTENT AND PERFORMANCE STANDARDS / TIMELINE

The curriculum in this course is aligned with the **California Industrial and Technology Model Curriculum Standards.** Where applicable, it meets the High School Exit Exam content standards for both Mathematics and English-Language Arts. To be successful, students must possess a foundation of knowledge, attitudes, abilities, and behaviors that are applicable to employment situations. These objectives are as follows:

1. Ability to apply academic skills to employment situations
2. Desirable work attitudes and habits, such as dependability and responsibility
3. Good interpersonal communication, problem-solving, and decision-making skills
4. Knowledge about careers, career planning, and job seeking skills
5. Ability to adapt to change

Opportunities for students to practice and expand on these key skills, abilities, and habits are emphasized throughout this curriculum via instruction and hands-on experience.

NOTE: The curriculum of this course addresses English-Language Arts Standards 9-12 for reading and writing.

- R 1.1 Identify and use the literal and figurative meanings of words and understand word derivations.
- R 2.0 Students read and understand appropriate grade–level-appropriate material
- W 1.1 Establish a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing. (9-10)
- W 1.2 Use precise language, action verbs, sensory details, appropriate modifiers, and the active rather than the passive voice. (9-10)
- W 1.4 Develop the main idea within the body of the composition through supporting evidence (e.g., scenarios, commonly) held beliefs, hypotheses, definitions). (9-10)
- W 1.1 Demonstrate an understanding of the elements of discourse(e.g., purpose, speaker, audience, form) when completing narrative, expository, persuasive, or descriptive writing assignments.(11-12)
- W 1.3 Structure ideas and arguments in a sustained, persuasive, and sophisticated way and support them with precise and relevant examples.(11-12)
- W/O 1.3 Demonstrate an understanding of proper English usage and control of grammar, paragraph and sentence structure, diction and syntax.
- W/O 1.4 Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.

First Semester

Suggested key activities/assignments may include **but are not limited to**:

- Students will be required to do some projects, depending on interest and skill level, such as component disassembly and reassembly.
- Students will write a summary on any given topic.
- Students will learn vocabulary.
- Students will read and comprehend information from the textbook.
- Students will research and answer questions from the text.

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting
- Use realia
- Use visuals
- Working in groups
- Authentic assessment
- Heterogeneous grouping

A. Transportation and Energy Core

Safety Practices – Week 1 & 2 [chapter 11]

Standard 1: Students will understand the health hazards, risks of toxic chemicals, safety practices, and environmental hazards related to their work in the shop. Students will operate and use equipment in the shop safely and efficiently; develop a knowledge of environmental safety hazards; and discuss ways of dealing with health and safety concerns.

Tools and Equipment – Week 2 thru 18 [chapters 5-10]

Standard 2: Students will understand how specific tools are used to perform maintenance and repair operations. Students will select and use the correct tools and pieces of equipment for diagnostic and repair procedures in the shop.

Measurement – Week 2 thru 18 [chapter 5]

Standard 3: Students will understand the measurement scales and systems used in transportation and energy operations. Students will follow industry-approved standards when using the measuring tools and measurement systems required in diagnostic and adjustment procedures.

*Grade 7— **Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.*

***Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity.*

***Algebra 1.1** Use variables in appropriate operations to write an expression and equation, an inequality, or a system of equations or inequalities that represents a verbal description.*

Application of Scientific Principles – Weeks 3 thru 5 [chapter 15 thru 17]

Standard 4: Students will understand scientific principles in relation to physical and chemical functions in transportation and energy systems. Students will use scientific principles of tools to explain the functioning and malfunctioning of energy systems.

*Grade 7— **Measurement 1.3** Use measures expressed as rates and measures expressed as products to solve problems; check the units of solutions, and use dimensional analysis to check the reasonableness of the answer.*

***Measurement 2.4** Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units.*

Environmental Principles – Week 4 [chapter 40]

Standard 5: Students will understand the effects of energy conversion systems on the environment, with an emphasis on transportation vehicles. Students will apply industry-specific regulations regarding hazardous waste and materials in the workplace.

*Grade 7— **Statistics 1.2** Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).*

***Statistics 1.3** Understand the meaning of, and be able to compute, the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set.*

Mechanical Principles – Week 5 [chapters 15 thru 17]

Standard 6: Students will understand mechanical principles in relation to transportation and energy technology. Students will use basic mechanical principles to explain and analyze the function and design of vehicle and energy systems.

*Grade 7— **Number Sense 1.2** Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.*

***Number Sense 2.3** Multiply, divide, and simplify rational numbers by using exponent rules.*

***Algebra 1.2** Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$*

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Internal and External Combustion – Week 6 [chapters 15, 16]

Standard 7: Students will understand the operating principles of internal and external combustion engines.

*Grade 7— **Measurement 2.1** Use formulas routinely for finding the perimeter and area of basic two-dimensional figures and the surface area and volume of basis three-dimensional figure, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms, and cylinders.*

***Measurement 2.4** Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units.*

- Suggested Writing Activity: Students will write a summary of the principles of the combustion engines.
  - W 1.1 Establish a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing. (9-10)
  - W 1.4 Develop the main idea within the body of the composition through supporting evidence (e.g., scenarios, commonly) held beliefs, hypotheses, definitions). (9-10)

Hydraulic Power and Energy – Week 7 [chapters 19, 51]

Standard 8: Students will understand the basic principles of hydraulic power. Students will explain applications of hydraulic power to generate electricity, mechanical movement and force multiplication.

*Grade 7— **Measurement 1.3** Use measures expressed as rates and measures expressed as products to solve problems; check the units of solutions, and use dimensional analysis to check the reasonableness of the answer.*

***Measurement 2.2** Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.*

***Measurement** 2.4 Relate the changes in measurement with a change of scale to the units **used** (e.g., square inches, cubic feet) and to conversions between units.*

Pneumatic Power and Energy – Week 7 [chapters 7, 10]

Standard 9: Students will understand the basic principles of pneumatic power. Students will explain the applications of pneumatic power to generate electricity, mechanical movement, and force multiplication.

*Grade 7— **Measurement 1.3** Use measures expressed as rates and measures expressed as products to solve problems; check the units of solutions, and use dimensional analysis to check the reasonableness of the answer.*

***Measurement 2.2** Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.*

***Measurement 2.4** Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units.*

Electrical Power and Energy – Week 8 [chapters 29, 30, 32, 34]

Standard 10: Students will understand the basic principles of electricity and electrical power. Students will explain how electricity is generated and used as a power source. Students will explain energy conversion (from electrical to mechanical) and chemical forms in relation to transportation vehicles.

*Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).*

Lifting and Handling Equipment – Week 2 thru 3 [chapters 8, 10]

Standard 37: Students will understand the operation of various types of lifting and handling equipment. Students will describe the precautions to take and signals to use in lifting components safely; identify equipment uses and limitations; and demonstrate basic rigging practices, including the proper use of attendant equipment.

Fasteners – Weeks 2 thru 10 [chapter 6]

Standard 38: Students will understand the basic principles associated with the use of mechanical fasteners. Students will identify and explain the proper use of various mechanical fasteners, including (but not limited to): bolts, nuts, screws, washers, locking devices (e.g.,) roll pins, snap, rings, and cotter pins, safety wire, wire terminals, lugs; and demonstrate use of tools associated with the installation and removal of various fasteners.

*Grade 7— **Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.*

Bolting Practices – week 10 [chapter 6]

Standard 39: Students will understand the basic principles of good bolting practices. Students will describe the major identifying characteristics of a bolt and a screw, (including SAE and metric methods of identification); identify and use torque wrenches; calculate torque specifications when using length adaptors; demonstrate proper torque pattern; identify fasteners of various hardness's and tempers (including stretch-to-fit); and demonstrate the proper use of safety wire techniques.

*Grade 7— **Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity.*

Lubricants and Lubrication – Week 11 [chapter 12]

Standard 40: Students will understand the fundamentals of lubricants and lubrication. Students will explain friction and the need for lubrication; explain the difference between oil, grease, and other lubricants (e.g. synthetics); identify terminology associated with the American Petroleum Index (API), such as viscosity, service rating, and pour point; and explain the effects of heat, water, time, and other contaminants on lubricants effectiveness.

*Grade 7— **Algebra 3.3** Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.*

Mathematics – Weeks 2 thru 14 [chapters 5, 17]

Standard 43: Students will understand the basic mathematical principles associated with the production of energy. Using basic mathematical principles, students will perform calculations that include (but not limited to) basic arithmetic functions, fractions and decimals, percentages, averages, number conversion, dimensional analysis, algebra, geometry, graphs and flow charts.

*Grade 7— **Number Sense 1.2 Add, subtract, multiply, and divide rational numbers** (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.*

***Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.*

Physics – Weeks 2 thru 14 [chapters 17, 25, 29]

Standard 44: Students will understand the basic terms, characteristics, and concepts of various physical processes related to component and system operations and maintenance in the field of energy production. Students will describe basic mechanical principles (e.g., simple machines, such as levers, gears, cams, and pulleys), energy conservation, hydraulics, and laws of motion.

*Grade 7— **Measurement 1.3** Use measures expressed as rates and measures expressed as products to solve problems; check the units of solutions, and use dimensional analysis to check the reasonableness of the answer.*

***Measurement 2.2** Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.*

***Measurement 2.4** Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units.*

Fire Protection – Week 1 & 2 [chapter 11]

Standard 50: Students will understand the basic fire hazards found in the energy industry. They will describe the elements of combustion; identify various types of fire and extinguishing methods; and identify the types of equipment used, describing their limitations. Students will describe safe work practices to follow in fighting a fire; identify allowable approach distances and precautions to be taken; and demonstrate the proper application and use of fire-extinguishing equipment.

Suggested Writing Activity: Students will describe safe work practices to follow in fighting a fire.

- W 1.1 Establish a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing. (9-10)
- W 1.4 Develop the main idea within the body of the composition through supporting evidence (e.g., scenarios, commonly) held beliefs, hypotheses, definitions). (9-10)

Electron Theory and Magnetism – Week 16 [chapter 29, 30]

Standard 55: Students will understand basic electron theory and magnetism. They will explain basic atomic principles and the movement of electrons through matter; define such electrical terms as charged particles, Coulomb's law, static electricity, potential difference, and electromotive force.

*Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).*

***Algebra 1.2** Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$*

***Algebra 1.4** Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality expression, constant) correctly.*

***Algebra 3.3** Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.*

Conductors, Insulation, and Semiconductors – Week 17 [chapters 34, 36, 38]

Standard 56: Students will understand that, in relation to electricity, all matter acts as a conductor, insulator, or semiconductor. They will explain the factors that affect a conductor's ability to conduct electricity; such factors would include resistively, the length of a conductor, cross sectional area of a conductor, and the effects of heat on a conductor. Students will explain the basic principles of semiconductors.

*Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).*

***Algebra 1.2** Use the correct order of operations to evaluate algebraic expressions such as*

$3(2x + 5)^2$

Meters – Week 17 [chapters 5, 29]

Standard 57: Students will understand the use and applications of basic electrical meters. Students will operate a digital multimeter safely to perform voltage, resistance, and current measurements.
*Grade 7— **Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity.*

Fundamentals of Electrical Circuits – Week 18 [chapters 29, 36, 38]

Standard 58: Students will understand the fundamentals of basic electrical circuits. They will construct, calculate, and perform measurements on components that are arranged in series, parallel, and combination configurations. Students will use the principles of Ohm's law and Kirchoff's law to analyze DC circuits.
*Grade 7— **Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity.*
__Number Sense 2.3__ Multiply, divide, and simplify rational numbers by using exponent rules.

Basic Electronics – Week 18 [chapter 34, 38]

Standard 63: Students understand the fundamentals of basic electronics. They will describe the operation of basic electronic devices, such as diodes, transistors and capacitors.
*Grade 7— **Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity.*
__Number Sense 2.3__ Multiply, divide, and simplify rational numbers by using exponent rules

Second Semester

Suggested key activities/assignments may include **but are not limited to:**

- Students will be required to do some projects, depending on interest and skill level, such as component disassembly and reassembly
- Students may be asked to write a summary on any given topic.
- Students will learn vocabulary.
- Students will read and comprehend information from the textbook.
- Students will research and answer questions from the text.
- Students will research problem solving information from shop service manuals and computer automotive information system.

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-

assessment and goal setting

- Use realia
- Use visuals
- Working in groups
- Authentic assessment
- Heterogeneous grouping

B. General Automotive Technology

Engine Principles of Operation – Week 19 [chapter 1 and 15]

Standard 250: Students will understand the basic operating principles of two-stroke-cycle and four-stroke-cycle gasoline engines. Students will explain the functions of the various engine parts during each stroke and describe how each part is interrelated in the output of energy.

Engines – Week 19 [chapters 18 and 19]

Standard 230: Students will understand the functions and interrelationships of gasoline engine parts and components.

*Grade 7— **Number Sense 1.2** Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.*

***Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.*

- Suggested Writing Activity: Students will respond to the chapter questions in writing.
  - W/O 1.3 Demonstrate an understanding of proper English usage and control of grammar, paragraph and sentence structure, diction and syntax.
  - W/O 1.4 Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.

Engine Block and Internal Components – Week 20 [chapter 19]

Standard 251: Students will understand how each part of the engine-block assembly operates and interacts with other parts to perform work functions in a running engine. Students will explain how the design and fit of each part is related to a function or functions of the engine.

*Grade 7— **Number Sense 1.2 Add, subtract, multiply, and divide rational numbers** (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.*

***Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.*

Cylinder Head and Valve Train – Week 21 [chapter 18]

Standard 252: Students will understand the design and construction of valves and

their relationship to seat design and guide design.

*Grade 7— **Number Sense 1.2** Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.*

***Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.*

Cooling Systems – Week 22 [chapters 20, 22 and 23]

Standard 256: Students will understand the design and function of air and liquid-cooling systems, drive belts and hoses.

*Grade 7— **Number Sense 1.2** Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.*

***Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.*

Lubrication System – Week 23 [chapter 12 and 19]

Standard 257: Students will understand the design of lubrication systems in relation to the physical properties of oil. Students will know the relationship between moving parts and the need for lubrication.

*Grade 7— **Mathematical Reasoning 1.2** Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.*

***Mathematical Reasoning 2.3** Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.*

- Suggested Writing Activity: Students will write a cause and effect essay on what causes failures in lubrication systems.
  - W 1.1 Establish a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing. (9-10)
  - W 1.4 Develop the main idea within the body of the composition through supporting evidence (e.g., scenarios, commonly) held beliefs, hypotheses, definitions). (9-10)

Exhaust Systems – Weeks 24 & 25[chapters 28, 40]

Standard 258: Students will understand the function and design of the exhaust system in liquid-cooled gasoline engines and the function of exhaust system air pollution controls

*Grade 7— **Mathematical Reasoning 1.2** Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.*

***Mathematical Reasoning 2.3** Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.*

Fuel Systems – Week 26 thru 28 [chapters 25, 26, 40]

Standard 231: Students will understand the functions of the basic components of carburetors and injection-type fuel systems. Students will demonstrate and explain the operations of various fuel systems and their relationship to air pollution control.

*Grade 7— **Mathematical Reasoning 1.2** Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.*

***Mathematical Reasoning 2.3** Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.*

Electrical Systems – Weeks 29 thru 31 [chapters 29, 30, 36 and 38]

Career Planning and Management

Students will complete a career research project demonstrating their knowledge of career qualifications. Students will complete job applications and undergo a mock interview that will demonstrate their job readiness skills.

Leadership and Teamwork

Students will complete a research project demonstrating their understanding of student-led organizations and their influence on student leadership. Students demonstrate leadership skills by competing as teams in shop activities.

Foundation Standard 3.0: Students understand how to make effective decisions, use career information, and manage personal career plans.

Foundation Standard 3.1: Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.
Foundation Standard 9.2: Understand the ways in which preprofessional associations, such as SkillsUSA, and competitive career development activities enhance academic skills, promote career choices, and contribute to employability

Standard 232: Students will understand the design purposes and function of automotive electrical and ignition systems and explain their interrelated operations. Students will demonstrate and explain the basic industry-required electrical system servicing

*Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).*
***Algebra 1.2** Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$*

Ignition Systems – Week 32 [chapter 38]

Standard 253: Students will understand the operation of point-ignition systems and solid-state ignition systems. Students will diagnose some common system failures and perform minor service and repair procedures in accordance with the manufacturer's specifications.

*Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).*
***Measurement and Geometry 1.3** Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.*

Starter Systems – Week 33 [chapter 32]

Standard 259: Students will understand starter electro-mechanical concepts and design application of electrical starting systems.

*Grade 7— **Measurement and Geometry 1.3** Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of*

the solutions; and use dimensional analysis to check the reasonableness of the answer.

Charging Systems- Week 34 [chapter 34]

Standard 260*: Students will understand the operation of electrical charging and regulating systems as used in piston engine powered automobiles.*
Grade 7—Measurement and geometry 1.3. Use measures expressed as rates and measures expressed as products to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.

V. STUDENT ASSESSMENT

Determination of whether or not a student meets the standards will derive from the following multiple measures:

- Teacher evaluation of oral reading assignments, written chapter vocabulary assignments, tool and auto parts identification and open book review question tests.
- Teacher observation of acceptable lab progress, time on task, work ethics and industry standard attendance.
- Assessments including semester final exams and performance tasks.

NOTE: These methods may include the use of accommodations for students with disabilities and the use of alternative but comparable assessments for students who require them.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS/SOFTWARE

The textbooks, materials, and technologies meet the state standards for this content area.

It is the desire of the district to maintain the most current materials available to help promote the best learning environment for all students. The text to be used in the course is ***Automotive Service***, Delmar Publishers, 1999.

Additional instructional materials include supplemental materials that accentuate the course curriculum and standards. The materials used in the courses are designed to develop cross-curriculum skills in communication (written and verbal), mathematics, and science.

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF CONTENT STANDARDS FOR ALL LEARNING STYLES

The course is designed to allow a multitude of teaching activities and activities that incorporate techniques that will encourage all students to succeed in achieving the prescribed standards.

- Instruction includes direct instruction through lectures, student oral reading, class work and assignments.

- Guided instruction is provided through instructor demonstrating to students the correct procedures for automotive repair and service. This is done with both group and individual instruction.
- Student projects encourage independent learning and give students opportunities to practice skills. .
- Students develop competencies based on standards and industry requirements.

Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.	**COURSE NAME:**	Advance Auto Services
	Grade Level:	10-12
	Prerequisite:	General Auto Grade C or Better
	Duration:	One Year (2 semesters) (2-3 hour block)
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	n/a
	Text – Board Adoption:	1999-2000
	Textbook Name:	Automotive Service Inspection Maintenance Repair
	Publisher:	Thomson Delmar Learning
	Publication Year/Edition:	2004 2nd Edition
	ISBN – Student Text:	1-40181-234-1
	ISBN – Teacher Text:	

II. COURSE DESCRIPTION

Advanced Auto Services is a second and third year course in the broad-based Transportation and Energy Technology program. Emphasis is on employability skills, power tool identification, advanced theory of operation, automobile components, service procedures, and good work and cleanup habits. The majority of the time will be process -based curriculum with emphasis on safety, service procedures, ASE standards of project construction, cooperative working relationships, and building leadership skills. Students will also have the option of participating in on-the-job training through the KROP "community classroom" when enrolled at Hanford High School.

III. CENTRAL INTELLECTUAL PURPOSE

Communications: Students practice communications by reading, writing, listening, speaking, and using visual and non-verbal skills in their daily lessons in the classroom and lab.

Critical Thinking / Problem Solving: Students practice these skills while diagnosing problems with cars and machines, determining the most efficient way to repair the problems and calculating the cost. Many scientific principles are used, including force, work, rate, resistance, energy, power, and momentum.

Research: Students learn and practice research skills in location of specifications, use of flow charts, component location & descriptions, procedures for doing repairs, component costs, and labor rates. Tools used for research include textbooks, magazines, service bulletins, manuals, charts, and computer software.

Technology: Students use advanced technology when doing projects that require the use of many different kinds of machines. Metal fabricating machines such as belt disc sanders, mills, lathes, and welders are used to repair and fabricate components for automobiles. Students use cleaning machines such as high-pressure washers, glass bead blasters, hot dip tanks, and push brooms. When painting cars, students use welders, sanders, grinders, HVLP paint guns, and gun washers. Students also use electronic and computer technology when diagnosing drivability problems, such as onboard diagnostic computers, scanners, millimeters and volt/amp testers. In addition, they learn how computer-aided drafting and robotics are used to design and build cars.

Ethics: Students demonstrate knowledge of and adherence to school, classroom, lab, and traffic rules, with particular emphasis on the honesty policy and respect for self and others. Emphasis is also placed on attentiveness during lectures and lab demonstrations, constructive use of lab time, and diligence in daily work on projects. Students learn to work together to prevent vandalism and theft in the lab.

IV. CONTENT AND PERFORMANCE STANDARDS / TIMELINE

The curriculum in this course is aligned with the **California Industrial and Technology Model Curriculum Standards.** Where applicable, it meets the High School Exit Exam content standards for both Mathematics and English-Language Arts. To be successful, students must possess a foundation of knowledge, attitudes, abilities, and behaviors that are applicable to employment situations. These objectives are as follows:

1 Ability to apply academic skills to employment situations
2 Desirable work attitudes and habits, such as dependability and responsibility
3 Good interpersonal communication, problem-solving, and decision-making skills
4 Knowledge about careers, career planning, and job seeking skills
5 Ability to adapt to change

Opportunities for students to practice and expand on these key skills, abilities, and habits are emphasized throughout this curriculum via instruction and hands-on experience.

NOTE: The curriculum of this course addresses English-Language Arts Standards 9-12 for reading and writing.

- R 1.1 Identify and use the literal and figurative meanings of words and understand word derivations.
- R 2.0 Students read and understand appropriate grade–level-appropriate material
- W 1.1 establishes a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing. (9-10)
- W 1.2 Use precise language, action verbs, sensory details, appropriate modifiers, and the active rather than the passive voice. (9-10)
- W 1.4 Develop the main idea within the body of the composition through supporting evidence (e.g., scenarios, commonly) held beliefs, hypotheses, definitions). (9-10)
- W 1.1 Demonstrate an understanding of the elements of discourse(e.g., purpose, speaker, audience, form) when completing narrative, expository, persuasive, or descriptive writing assignments.(11-12)
- W 1.3 Structure ideas and arguments in a sustained, persuasive, and sophisticated way and support them with precise and relevant examples.(11-12)
- W/O 1.3 Demonstrate an understanding of proper English usage and control of grammar, paragraph and sentence structure, diction and syntax.
- W/O 1.4 Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.

First Semester

Suggested key activities/assignments may include **but are not limited to**: . Students will be required to do service projects, depending on interest and skill level, such as engine rebuilding, brake servicing, and tune-ups. . Students will write a summary on any given topic. .

Students will learn vocabulary. . Students will read and comprehend information from the textbook and service manuals. . Students will research and answer questions from the text and the ALLDATA computer information system.

A. Transportation and Energy Core

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

SDAIE Strategies

1. Use realia
2. Use visuals
3. Working in groups
4. Authentic assessment
5. heterogeneous grouping

Safety Practices – Week 1 [chapter 11]

Standard 1: Students will understand the health hazards, risks of toxic chemicals, safety practices, and environmental hazards related to their work in the shop. Students will operate and use equipment in the shop safely and efficiently; develop knowledge of environmental safety hazards; and discuss ways of dealing with health and safety concerns.

Tools, Equipment and Reference Material – Weeks 2 and 3 [chapters 4, 8, 9, 10.]

Standard 2: Students will understand how specific tools are used to perform maintenance and repair operations. Students will select and use the correct tools and pieces of equipment for diagnostic and repair procedures in the shop.

Project: The students will know when to use a metric wrench or a fractional wrench.

Measurement – Week 3 [chapter 5]

Standard 3: Students will understand the measurement scales and systems used in transportation and energy operations. Students will follow industry-approved standards when using the measuring tools and measurement systems required in diagnostic and adjustment procedures.

Grade 7— **Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.
Number Sense 1.6 Calculate the percentage of increase and decrease of a quantity.
Algebra 1.1 Use variables in appropriate operations to write an expression and equation, an inequality, or a system of equations or inequalities that represents a verbal description.

Application of Scientific Principles – Throughout Course [most chapters]

Standard 4: Students will understand scientific principles in relation to physical and chemical functions in transportation and energy systems. Students will use scientific principles of tools to explain the functioning and malfunctioning of energy systems.

Grade 7— **Measurement 1.3** Use measures expressed as rates and measures expressed as products to

solve problems; check the units of solutions, and use dimensional analysis to check the reasonableness of the answer.

Standard 6: Students will understand mechanical principles in relation to transportation and energy technology. Students will use basic mechanical principles to explain and analyze the function, function possibilities, and design of vehicle and energy systems.

Grade 7— **Number Sense 1.2** Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.

Number Sense 2.3 Multiply, divide, and simplify rational numbers by using exponent rules.

Algebra 1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$.

. Suggested Writing Activity: Students will write a summary of the principles of energy conversion.

 W 1.1 establishes a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing. (910)

 W 1.4 Develop the main idea within the body of the composition through supporting evidence (e.g., scenarios, commonly) held beliefs, hypotheses, definitions). (9-10)

Hydraulic Power and Energy – Throughout Course [chapters 19, 51, 58, 66]

Standard 8: Students will understand the basic principles of hydraulic power. Students will explain applications of hydraulic power to generate electricity, mechanical movement and force multiplication. Students will do real and mock rebuilds of components that operate by the use of hydraulics.

Grade 7— **Measurement 1.3** Use measures expressed as rates and measures expressed as products to solve problems; check the units of solutions, and use dimensional analysis to check the reasonableness of the answer.

Measurement 2.2 Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.

Measurement 2.4 Relate the changes in measurement with a change of scale to the units **used** (e.g., square inches, cubic feet) and to conversions between units.

Project: The students will be encouraged to bleed the brakes on their own car.

Pneumatic Power and Energy – Week 2 [chapters 7, 10]

Standard 9: Students will understand the basic principles of pneumatic power. Students will explain the applications of pneumatic power to generate electricity, mechanical movement, and force multiplication. Students will use pneumatic tools and machines

Grade 7— **Measurement 1.3** Use measures expressed as rates and measures expressed as products to solve problems; check the units of solutions, and use dimensional analysis to check the reasonableness of the answer.

Measurement 2.2 Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.

Measurement 2.4 Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units.

Electrical Power and Energy – Throughout Course [chapters 29 thru 39 and 73 thru 76]

Standard 10: Students will understand the basic principles of electricity and electrical power. Students will explain how electricity is generated and used as a power source. Students will explain energy conversion (from electrical to mechanical) and chemical forms in relation to transportation vehicles.

Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half

as large as area A).

Project: The students will be encouraged to service the battery on their own car.

Lifting and Handling Equipment – Weeks 2 and 3 [chapters 8, 10]

Standard 37: Students will understand the operation of various types of lifting and handling equipment. Students will describe the precautions to take and signals to use in lifting components safely; identify equipment uses and limitations; and demonstrate basic rigging practices, including the proper use of attendant equipment.

Project: The students will raise a car on the above ground lift.

Fasteners – Throughout Course [chapter 6]

Standard 38: Students will understand the basic principles associated with the use of mechanical fasteners. Students will identify and explain the proper use of various mechanical fasteners, including (but not limited to): bolts, nuts, screws, washers, locking devices (e.g.,) roll pins, snap, rings, and cotter pins, safety wire, wire terminals, lugs; and demonstrate use of tools associated with the installation and removal of various fasteners.

Grade 7— **Number Sense 1.3** Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.

Bolting Practices – Throughout Course [chapter 6]

Standard 39: Students will understand the basic principles of good bolting practices. Students will describe the major identifying characteristics of a bolt and a screw. (including SAE and metric methods of identification); identify and use torque wrenches; calculate torque specifications when using length adaptors; demonstrate proper torque pattern; identify fasteners of various hardness's and tempers (including stretch-to-fit); and demonstrate the proper use of safety wire techniques.

Grade 7— **Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity.

Project: The students will use a torque wrench to tighten fasteners correctly.

Mathematics – Throughout Course

Standard 43: Students will understand the basic mathematical principles associated with the production of energy. Using basic mathematical principles, students will perform calculations that include (but not limited to) basic arithmetic functions, fractions and decimals, percentages, averages, number conversion, dimensional analysis, algebra, geometry, graphs and flow charts.

Grade 7— **Number Sense 1.2 Add, subtract, multiply, and divide rational numbers** (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.
Number Sense 1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.

Project: Calculate cubic inch displacement on an engine project.

Physics – Throughout Course

Standard 44: Students will understand the basic terms, characteristics, and concepts of various physical processes related to component and system operations and maintenance in the field of energy production. Students will describe basic mechanical principles (e.g., simple machines, such as levers, gears, cams, and pulleys), energy conservation, hydraulics, and laws of motion.

Grade 7— **Measurement 1.3** Use measures expressed as rates and measures expressed as products to solve problems; check the units of solutions, and use dimensional analysis to check the reasonableness of the answer.
Measurement 2.2 Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.

Measurement 2.4 Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units.

Project: Students will fuse metals together using welding machines.

Fire Protection – Week 1 [chapter 11]

Standard 50: Students will understand the basic fire hazards found in the energy industry. They will describe the elements of combustion; identify various types of fire and extinguishing methods; and identify the types of equipment used, describing their limitations. Students will describe safe work practices to follow in fighting a fire; identify allowable approach distances and precautions to be taken; and demonstrate the proper application and use of fire-extinguishing equipment.

Suggested Writing Activity: Students will describe safe work practices to follow in fighting a fire.

- W 1.1 establishes a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing. (910)
- W 1.4 Develop the main idea within the body of the composition through supporting evidence (e.g., scenarios, commonly) held beliefs, hypotheses, definitions). (9-10)

Electron Theory and Magnetism – Week 10 thru 12 [chapter 29, 30, 36]

Standard 55: Students will understand basic electron theory and magnetism. They will explain basic atomic principles and the movement of electrons through matter; define such electrical terms as charged particles, Coulomb's law, static electricity, potential difference, and electromotive force.

Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).

Algebra 1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$ **Algebra 1.4** Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality expression, constant) correctly.

Algebra 3.3 Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.

Conductors, Insulation, and Semiconductors – Week 10 thru 12 [chapters 34, 36]

Standard 56: Students will understand that, in relation to electricity, all matter acts as a conductor, insulator, or semiconductor. They will explain the factors that affect a conductor's ability to conduct electricity; such factors would include resistively, the length of a conductor, cross sectional area of a conductor, and the effects of heat on a conductor. Students will explain the basic principles with semiconductors, such as valance and doping, and identify the elements known to be semiconductors.

Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).

Algebra 1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$

Meters – Week 10 thru 12 [chapters 5, 17, 42]

Standard 57: Students will understand the use and applications of basic electrical meters. Students will operate a digital multimeter safely to perform voltage, resistance, and current measurements.

Grade 7— **Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity.

Project: Students will use multi-meters to measure voltage and resistance.

Fundamentals of Electrical Circuits – Week 13 [chapters 29, 36, 38]

Standard 58: Students will understand the fundamentals of basic electrical circuits. They will construct, calculate, and perform measurements on components that are arranged in series, parallel, and combination configurations. Students will use the principles of Ohm's law and Kirchoff's law to analyze DC circuits.

Grade 7— **Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity.
Number Sense 2.3 Multiply, divide, and simplify rational numbers by using exponent rules.

Basic Electronics – Week 14 [chapter 34, 38]

Standard 63: Students understand the fundamentals of basic electronics. They will describe the operation of basic electronic devices, such as diodes, transistors, and silicon-controlled rectifiers (SCRs); explain the operation of basic electronic circuits, such as power supplies, amplifiers, filters, and switching circuits.

Grade 7— **Number Sense 1.6** Calculate the percentage of increase and decrease of a quantity. **Number Sense 2.3** Multiply, divide, and simplify rational numbers by using exponent rules.

Second Semester

Suggested key activities/assignments may include **but are not limited to:** . Students will be required to do service projects, depending on interest and skill level, such as engine rebuilding, brake servicing and tune-ups. . Students may be asked to write a summary on any given topic. . Students will learn vocabulary. . Students will read and comprehend information from the textbook. . Students will research and answer questions from the text.

B. General Automotive Technology

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

SDAIE Strategies

1. Use realia
2. Use visuals
3. Working in groups
4. Authentic assessment
5. heterogeneous grouping

Engines – Week 19 [chapters 18 and 19 and 42 thru 50]

Standard 230: Students will understand the functions and interrelationships of gasoline engine parts and components. Students will repair, service, adjust, and replace engine parts and components in accordance with the manufacturer's specifications.

Grade 7— **Number Sense 1.2** Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.
Number Sense 1.3 Convert fractions to decimals and percents and use these

representations in estimations, computations, and applications.

. Suggested Writing Activity: Students will respond to the chapter questions in writing.

 W/O 1.3 demonstrate an understanding of proper English usage and control of grammar, paragraph and sentence structure, diction and syntax.

 W/O 1.4 Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.

Project: Students will adjust valves.

Engine Block and Internal Components – Week 20 [chapters 19 and 47]

Standard 251: Students will understand how each part of the engine-block assembly operates and interacts with other parts to perform work functions in a running engine. Students will explain how the design and fit of each part is related to a function or functions of the engine. Students will be able to assemble an engine short block

Grade 7— **Number Sense 1.2 Add, subtract, multiply, and divide rational numbers** (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.

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Number Sense 1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.

Project: Students will torque main bearing cap bolts.

Cylinder Head and Valve Train – Week 21 [chapters 18 and 46]

Standard 252: Students will understand the design and construction of valves and their relationship to seat design and guide design. Students will service valves, springs, seats, and guides to bring them up to factory standards.

Grade 7— **Number Sense 1.2** Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.

Number Sense 1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.

Project: Students will grind one valve and one valve seat.

Cooling Systems – Week 22 [chapters 20 thru 24]

Standard 256: Students will understand the design and function of liquid-cooling systems. Students will troubleshoot and service cooling systems in liquid-cooled engines.

Grade 7— **Number Sense 1.2** Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.

Number Sense 1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.

Project: Student will replace thermostat and service cooling system.

Lubrication System – Week 23 [chapter 12 and 19]

Standard 257: Students will understand the design of lubrication systems in relation to the physical properties of oil. Students will diagnose failures in lubrication systems and perform the necessary service and repairs in accordance with factory specification.

Grade 7— **Mathematical Reasoning 1.2** Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed. **Mathematical Reasoning 2.3** Estimate unknown quantities graphically and solve for them by using

logical reasoning and arithmetic and algebraic techniques.

. Suggested Writing Activity: Students will write a cause and effect essay on what causes failures in lubrication systems.

 W 1.1 establishes a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing. (910)

 W 1.4 Develop the main idea within the body of the composition through supporting evidence (e.g., scenarios, commonly) held beliefs, hypotheses, definitions). (9-10)

Project: The students will change the oil and filter on their own car.

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Exhaust Systems – Week 24 [chapters 28, 40]

Standard 258: Students will understand the function and design of the exhaust system in liquid-cooled gasoline engines. Students will diagnose the malfunctioning system and service, adjust, and repair exhaust systems in accordance with factory specifications.

Grade 7— **Mathematical Reasoning 1.2** Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed. **Mathematical Reasoning 2.3** Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.

Fuel Systems – Week 25 [chapters 25, 26, 40]

Standard 231: Students will understand the functions of the basic components of carburetors and injection-type fuel systems. Students will demonstrate and explain the operations of various fuel systems; and they will demonstrate and explain the service procedures for those systems in accordance with the manufacturer's specifications.

Grade 7— **Mathematical Reasoning 1.2** Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed. **Mathematical Reasoning 2.3** Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.

Project: The students will replace a fuel filter.

Electrical Systems – Week 26 [chapters 29 thru 39]

Standard 232: Students will understand the design purposes and function of automotive electrical and ignition systems and explain their interrelated operations. Students will demonstrate and explain the basic industry-required service procedures for each automotive electrical system.

Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).

Algebra 1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$

Project: The students will make a solder connection.

Ignition Systems – Week 27 [chapters 38, 39]

Standard 253: Students will understand the operation of point-ignition systems and solid-state ignition systems. Students will diagnose common system failures and perform necessary service and repair procedures in accordance with the manufacturer's specifications.

Grade 7— **Algebra 1.1** Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as

large as area A).

Measurement and Geometry 1.3 Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.

Project: The students will replace an ECM in a distributor.

Starter Systems – Week 28 [chapters 32, 33]

Standard 259: Students will understand starter electro-mechanical concepts and design application. Students will troubleshoot, service, and repair the electric starters and in various other systems using factory specifications as their guideline.

Grade 7— **Measurement and Geometry 1.3** Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.

Charging Systems – Week 29 [chapters 34 and 35]

Students will complete a career research project demonstrating their knowledge of career qualifications. Students will complete job applications and undergo a mock interview that will demonstrate their job readiness skills.

Leadership and Teamwork

Students will complete a research project demonstrating their understanding of student-led organizations and their influence on student leadership. Students demonstrate leadership skills by competing as teams in shop activities.

Foundation Standard 3.0: Students understand how to make effective decisions, use career information, and manage personal career plans.

Foundation Standard 3.1: Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.
Foundation Standard 9.2: Understand the ways in which preprofessional associations, such as SkillsUSA, and competitive career development activities enhance academic skills, promote career choices, and contribute to employability

Standard 260: Students will understand the alternator electro-mechanical concepts and design application. Students will troubleshoot, service, and repair alternators using factory specifications as their guideline.

Grade 7- Measurement and Geometry1.3 Use measures expressed as rates (e.g. speed, density)and measures expressed as products (e.g. person- days) to solve problems; check the units of the solutions; and use dimensional analysis to check reasonableness of the answer.

Project The students will disconnect, service and reconnect a battery properly.

V. STUDENT ASSESSMENT Determination of whether or not a student meets the

standards will derive from the following multiple measures:

- Teacher evaluation of oral reading assignments, written chapter vocabulary assignments, tool and auto parts identification and open book review question tests.
- Teacher observation of acceptable lab progress, time on task, work ethics and industry standard attendance.
- Assessments including semester final exams and performance tasks.

NOTE: These methods may include the use of accommodations for students with disabilities and the use of alternative but comparable assessments for students who require them.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS/SOFTWARE **The textbooks, materials, and technologies meet the state standards for this content area.**

It is the desire of the district to maintain the most current materials available to help promote the best learning environment for all students. The text to be used in the course is **Automotive Excellence**, Glencoe/McGraw Hill, 2000.

Additional instructional materials include supplemental materials that accentuate the course curriculum and standards. The materials used in the courses are designed to develop cross-curriculum skills in communication (written and verbal), mathematics, and science.

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF CONTENT STANDARDS FOR ALL LEARNING STYLES

The course is designed to allow a multitude of teaching activities and activities that incorporate techniques that will encourage all students to succeed in achieving the prescribed standards.

- Instruction includes direct instruction through lectures, student oral reading, class work and assignments.
- Guided instruction is provided through instructor demonstrating to students the correct procedures for automotive repair and service. This is done with both group and individual instruction.
- Student projects encourage independent learning and give students opportunities to practice skills. .
- Students develop competencies based on standards and industry requirements.

Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.	**COURSE NAME:**	Computer Aided Drafting and Design 1 (CAD 1)
	Grade Level:	10-12
	Prerequisite:	Mech Drawing or IIP, Word Processing 1 or Business 1 (HH), Algebra 1
	Duration:	One Year (2 semesters)
	Credit:	CTE
	Guide – Board Adoption:	Revised April, 2011
	Course Articulation:	n/a
	Text – Board Adoption:	
	Textbook Name:	n/a
	Publisher:	
	Publication Year/Edition:	
	ISBN – Student Text:	
	ISBN – Teacher Text:	

II. COURSE DESCRIPTION

Computers have revolutionized the drafting industry and have changed methods used to produce drawings. A drafter must still know how to use basic tools because the computer is simply a tool to eliminate boring and repetitive work.

This course is designed to teach students the needed CADD skills before entering the job market today. As automation increases, the need for trained CADD operators will also increase. A well-trained drafter must have CADD training to be able to complete the job market today and in the future.

III. CENTRAL INTELLECTUAL PURPOSE

Communications

Reading

Comprehension as shown though class discussions, writing exercises and drawings in a variety of genres, including essay, short reports and different drawings.

Writing

Instruction/review/practice of drawings and short reports on design. Analysis of units of mechanical drawing text.

Speaking

Class/group discussion of mechanical drawing practices and design concepts. Oral presentations of design concept for final project.

Critical Thinking/Problem Solving

Comprehension of mechanical drawing practices and design solving, ability to recognize and analyze as drafting concept and or design solution, solution set-up, drawing and design methods, and problem solving solution strategies.

Research

Using various sources of information from classroom references, school library, and computer network.

Technology

Students will demonstrate proficiency with available classroom technology to complete assigned mechanical drawing and design projects.

Ethics

Students will demonstrate personal, social, and civic responsibility while working in the classroom

Leadership

- Students understand effective leadership styles, key concepts of group dynamics, team and individual decision making, the benefits of workforce diversity, and conflict resolution.
- 9.1 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace settings.

IV. CONTENT/TIMELINE/ PERFORMANCE STANDARDS

Upon completion of course in Computer Aided Drafting and Design (CADD), the students should be able to demonstrate the following:

1. Understand the basic functions of a computer.
2. Know terminology related to computing and CADD
3. Perform Drafting functions on the computer
4. File and retrieve stored documents
5. Plot drawings by use of the printer and plotter
6. Perform basic problem analysis

FIRST SEMESTER

Weeks 1-6

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Orientation/Review

A. Introduction to class and computers
B. Review types of lines and technique for drawing them with CADD program
C. Review basic geometric drawing technique on CADD program

Key Activities

- Line review drawings with CADD program
- Review basic geometric drawing techniques and use CADD to draw them.

Drafting Technology Standards

Standard 3: Care and Use of Tools and Equipment
Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.

Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations
Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will

produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Standard 17: Applied Geometry

Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

2.4 Synthesize content; paraphrase and connect ideas

Grades 8-12 Geometry

16.0 Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Grades 8-12 Algebra

3.0 Students solve equations and inequalities involving absolute values.

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Week 7

Lettering

A. Technique
B. Spacing of letters and words
C. Vertical numbers

Key Activities

- Lettering practice worksheets
- Lettering in ongoing lesson that is practiced through out the course

Drafting Technology Standards

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating

drawings.

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations

Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Reading

2.4 Synthesize content; paraphrase and connect ideas.

Weeks 8-13

View of Objects and Dimensioning

A. Orthographic drawings
B. Hidden and center lines
C. Dimensioning

Key Activities

- Two view plates
- Three view plates
- Both two view and three view plates using hidden and center lines
- Dimensioning of drawings

Drafting Technology Standards

Standard 7: Orthographic Drawing

Students will understand, identify, and correctly use the alphabet of lines. They will develop and object graphically, using appropriate projection techniques.

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 8: Dimension Practices

Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications.

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations

Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Grades 8-12 Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Reading

2.4 Synthesize content; paraphrase and connect ideas.

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Weeks 14-18

Thread and Fasteners

A. Unified
B. Acme
C. American Standard
D. Symbols
E. Bolt and nut
F. Hatching
G. Layers

Key Activities

- Students will produce plated of different types of threads, as well as, their symbols
- Students will continue to use these skill throughout the rest of this course
- Students will use hatching and layers in the production of drawings

Drafting Technology Standards

Standard 4: Drafting Measurement

Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 8: Dimension Practices

Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations

Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Standard 17: Applied Geometry

Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

SECOND SEMESTER

Week 1-6

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Working Drawings

A. Industrial Drafting
B. Standards
C. Title strip and parts list
D. General Assembly

Key Activities

- Students will produce a set of working drawings

Drafting Technology Standards

Standard 21: Working and Production Drawings
Students will understand the relationship of detail drawings, assembled drawings, and working drawings. Students will complete the various set of working drawings, using appropriate line work, symbols, and current standards.

Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields.
Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering
Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 8: Dimension Practices
Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations
Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Weeks 7-12

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction

Pictorial Drawings

A. Isometric drawings
B. Oblique drawing
C. Two-point perspective drawing

Key Activities

- Students will create plates using isometric, oblique, and two-point perspective techniques

Drafting Technology Standards

Standard 10: Pictorial Drawing
Students will understand the structure, components, types, sequential construction methods, and applications of pictorial assemblies. They will draw objects accurately in pictorial format.

Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields.
Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering
Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 8: Dimension Practices
Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations
Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Grade 6 Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given

relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Weeks 13-18

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

3-D Drawing

A. 3-D types (wire frame, solids, and surface)
B. 3-D geometry
C. 3-D Dimensions
D. Views and Rotations

Key Activities

- Students will understand and create drawings in 3-D form.

Drafting Technology Standards

Standard 10: Pictorial Drawing

Students will understand the structure, components, types, sequential construction methods, and applications of pictorial assemblies. They will draw objects accurately in pictorial format.

Standard 4: Drafting Measurement

Students will understand measuring systems and how measuring instruments are used in drafting and related fields.

Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts

when creating drawings.

Standard 8: Dimension Practices

Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations

Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Grade 6 Number Sense

3.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Grades 8-12 Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Grades 8-12 Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

V. STUDENT ASSESSMENT

- A variety of authentic assessments will be used such as portfolios, student presentations, drawings and rubric scoring. Quizzes, test, participation, and mentor evaluations will be used.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS / SOFTWARE

The designated textbooks, materials, and technologies meet the state standards for this content area.

A. Primary text: *Mechanical Drawing CAD-communications*; Twelfth edition, French/Svensen/Helsel/Urbanick, Glencoe, 1997

B. Supplementary texts: Turbo Cad workbook

C. Teacher/student resources:

- Turbo Cad

- AutoCAD 2002
- ArchiCAD 8

I**VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF INDUSTRIAL AND TECHNOLOGY CONTENT STANDARDS FOR ALL LEARNING STYLES**

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence (learning styles).

LINGUISTIC LEARNER

oral reports
essays
debates and speeches

LOGICAL/MATHEMATICAL LEARNER

graphic organizers
timeline
prediction exercises
coded messages
models
computer project

SPATIAL LEARNER

drawings and paintings
maps and flow charts
displays

BODILY-KINESTHETIC LEARNER

demonstration speeches
experiments

INTERPERSONAL LEARNER

discussions
cooperative and collaborative projects
peer coaching
conducting interviews
simulation activities

INTRAPERSONAL LEARNER

observations

Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.		
	COURSE NAME:	Computer Aided Drafting and Design 2 (CAD 2)
	Grade Level:	10-12
	Prerequisite:	C or better in CAD 1, Alg. 1, Instructor Approval
	Duration:	One Year (2 semesters)
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	n/a
	Text – Board Adoption:	
	Textbook Name:	n/a
	Publisher:	
	Publication Year/Edition:	
	ISBN – Student Text:	
	ISBN – Teacher Text:	

II. COURSE DESCRIPTION

This course reviews skills from CAD 1 and continues revolutions, tolerance, oblique, orthographic projections, 3D drawings and assembly and production drawings. Students draw threads, fasteners and metal work. An intro to jobs and work places is included. Shaded and working drawings are introduced. Students may draft plans for wood/metal shops.

III. CENTRAL INTELLECTUAL PURPOSE

Communications

Reading

Comprehension as shown though class discussions, writing exercises and drawings in a variety of genres, including essay, short reports and different drawings.

Writing

Instruction/review/practice of drawings and short reports on design. Analysis of units of mechanical drawing text.

Speaking

Class/group discussion of mechanical drawing practices and design concepts. Oral presentations of design concept for final project.

Critical Thinking/Problem Solving

Comprehension of mechanical drawing practices and design solving,

ability to recognize and analyze as drafting concept and or design solution, solution set-up, drawing and design methods, and problem solving solution strategies.

Research

Using various sources of information from classroom references, school library, and computer network.

Technology

Students will demonstrate proficiency with available classroom technology to complete assigned mechanical drawing and design projects.

Ethics

Students will demonstrate personal, social, and civic responsibility while working in the classroom

Leadership

- Students understand effective leadership styles, key concepts of group dynamics, team and individual decision making, the benefits of workforce diversity, and conflict resolution.
- 9.1 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace settings.

IV. CONTENT/TIMELINE/ PERFORMANCE STANDARDS

FIRST SEMESTER

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Weeks 1-6

Orientation/Review

A. Re-introduction to class and computers
B. Review types of lines and technique for drawing them with CADD program
C. Review basic geometric drawing technique on CADD program

Key Activities

- Line review drawings with CADD program
- Review basic geometric drawing techniques and use CADD to draw them.

Drafting Technology Standards

Standard 3: Care and Use of Tools and Equipment
Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.

Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations
Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Standard 17: Applied Geometry
Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

2.4 Synthesize content; paraphrase and connect ideas

Geometry

16.0 Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Algebra

3.0 Students solve equations and inequalities involving absolute values.

Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Week 7-12

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Isometric Design Review

A. Isometric drawing
B. Bridge building unit

Key Activities

- Isometric drawing of bridge
- Construct bridge out of balsa wood

Drafting Technology Standards

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations
Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Standard 17: Applied Geometry
Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions

Reading

2.4 Synthesize content; paraphrase and connect ideas.

Weeks 13-18

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

Architectural Floor Plan

A. Location and size of walls
B. Location and size of doors and windows
C. Cabinet, Appliances, and Permanent Fixtures
D. Dimensioning
E. Scale and sheet recognition

Key Activities

- Students will produce a floor plan of no more than 2000 sq.ft. using proper architectural technique

Drafting Technology Standards

- **Standard 25: Architectural Working Drawings**
  Students will understand and develop architectural working drawings, using current industry standards.
- **Standard 24: Architectural Drawing Procedures**
  Students will understand, select, and use professional architectural drawing procedures that are consistent with current industrial standards.
- **Standard 3: Care and Use of Tools and Equipment**
  Students will understand various tools, equipment, media, and materials used in all fields of drafting and understand methods and techniques for employing them appropriately. Students will correctly refer to, use, and care for drafting tools, equipment, media and materials.
- **Standard 4: Drafting Measurement**
  Students will understand measuring systems and how measuring instruments are used in drafting and related fields. Students will measure to the degree of accuracy required in a variety of particular drafting applications.
- **Standard 17: Applied Geometry:**
  Students will understand how to visualize and calculate mathematically a variety of geometric forms. They will construct, structure, form, design and geometrically define objects and surfaces.

Reading

- **2.4** Synthesize content; paraphrase and connect ideas.

Geometry

- **16.0** Students will perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
- **22.0** Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Algebra

- **3.0** Students solve equations and inequalities involving absolute values.

Number sense

- **2.0** Students calculate and solve problems involving addition, subtraction, multiplication, and division.
- **2.1** Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.
- **2.4** Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions

SECOND SEMESTER

Week 1-9

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

3-D Solid Modeling Working Drawings

A. Industrial Drafting
B. Standards
C. Title strip and parts list
D. General Assembly
E. 3-D types (wire frame, solids, and surface)
F. 3-D geometry
G. 3-D Dimensions
H. Views and Rotations

Key Activities

- Students will produce a set of working drawings in 3-D solid modeling technique for a project that is going to be built in Metal or Wood classes (i.e. Trailer, gazebo, entertainment center, etc…)

Drafting Technology Standards

Standard 21: Working and Production Drawings
Students will understand the relationship of detail drawings, assembled drawings, and working drawings. Students will complete the various set of working drawings, using appropriate line work, symbols, and current standards.
Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields.

Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering

Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 8: Dimension Practices

Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

Standard 14: Computer-Aided Drafting/Design (CADD) and Operations

Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

Weeks 10-18

SDAIE Instructional Strategies

- Vocabulary & Language Development: Identify, highlight, and refer to key vocabulary
- Explicit Instruction: Move from whole to part to whole
- Guided Instruction: Structure opportunities for student to student interaction during direct instruction
- Metacognition & Authentic Assessment: Utilize rubrics for student self-assessment and goal setting

3-d Solid Modeling Architectural Drawing

A. Rendering
B. Solid Modeling
C. 3-D geometry
D. 3-D Dimensions
E. Views and Rotations

Key Activities

- Students will create a 3-D rendering of the floor plan which they created in the first semester of class using solid modeling techniques

Drafting Technology Standards

Standard 10: Pictorial Drawing
Students will understand the structure, components, types, sequential construction methods, and applications of pictorial assemblies. They will draw objects accurately in pictorial format.

Standard 4: Drafting Measurement
Students will understand measuring systems and how measuring instruments are used in drafting and related fields.
Students will measure to the degree of accuracy required in a variety of particular drafting applications.

Standard 5: Lettering
Students will know the importance of quality lettering and the variety of the lettering fonts used in various disciplines. Students will apply appropriate lettering techniques and fonts when creating drawings.

Standard 8: Dimension Practices
Students will understand and apply dimensioning practices to drawings, using the current standards of dimensioning and tolerance for a variety of drafting applications

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Students will understand how to use software to create geometry and will apply dimensioning practices to complete drawings. Students will organize drawings, using accepted CADD procedures. Students will apply appropriate software file management procedures. They will produce hard copies of completed drawings and provide electronic files for a variety of graphic output.

Number Sense

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division.

2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions and explain why a particular operation was used for a given situation.

2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions.

Algebra 1

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Geometry

8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric shapes.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems

16.0 Students will perform basic constructions with straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

17.0 Students prove theorems by using coordinate geometry including the mid-point of a line segment, the distance formula, and various forms of equations of lines and circles.

21.0 Students prove and solve problems regarding relationship among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

V. STUDENT ASSESSMENT

- A variety of authentic assessments will be used such as portfolios, student presentations, drawings and rubric scoring. Quizzes, test, participation, and mentor evaluations will be used.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS / SOFTWARE

The designated textbooks, materials, and technologies meet the state standards for this content area.

A. Primary text: *Mechanical Drawing CAD-communications*; Twelfth edition, French/Svensen/Helsel/Urbanick, Glencoe, 1997

B. Supplementary texts: Turbo Cad workbook

C. Teacher/student resources:

- Turbo Cad
- AutoCAD 2002
- ArchiCAD 8

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF INDUSTRIAL TECHNOLOGY CONTENT STANDARDS FOR ALL LEARNING STYLES

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence (learning styles)

LINGUISTIC LEARNER

oral reports
essays
debates and speeches

INTERPERSONAL LEARNER

discussions
cooperative and collaborative projects

peer coaching
conducting interviews
simulation activities

LOGICAL/MATHEMATICAL LEARNER

graphic organizers
timeline
prediction exercises
coded messages
models
computer project

SPATIAL LEARNER

drawings and paintings
maps and flow charts
displays

BODILY-KINESTHETIC LEARNER

demonstration speeches
experiment

Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.	**COURSE NAME:**	Web Page Design 1
	Grade Level:	10-12
	Prerequisite:	C or better in Word Processing 1 or Business 1
	Duration:	One Year (2 semesters)
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	n/a
	Text – Board Adoption:	
	Textbook Name:	n/a
	Publisher:	
	Publication Year/Edition:	
	ISBN – Student Text:	
	ISBN – Teacher Text:	

I. COURSE DESCRIPTION:

This course is designed to teach the student how to create exciting Web Pages, of value. The course will provide entry to intermediate level training in Hyper Text Mark-up Language (HTML). This hands-on experience will include topics of page layout, design, syntax, lists, table, multimedia (images, sound and video), interactive forms, JavaScript, and Cascade Styling Sheets.

II. CENTRAL INTELLECTUAL PURPOSE:

Communications

Reading

Comprehension is shown through discussion and writing using a variety of topics. The student is given a topic or daily warm-up and the student researches the Internet to find the answer. Students are given technical documents related to HTML codes to understand and implement.

Writing

Short research questions are typed using Microsoft Word. The short research includes topics in history, English grammar, current events, music, technology, etc.

Note taking and paraphrasing are used in project introductions, test reviews, and post project reviews.

Research for projects is written and cited for Web Page content.

Speaking
Class/group presentations of Web Site
Oral presentation on how to publish a site
Providing a topic or warm-up question to a partner

Critical Thinking/Problem Solving

The student will exhibit critical and creative thinking skills, logical reasoning and problem solving. These skills include applying basic skills in order to calculate, estimate and measure. The student will identify, locate and organize information/data; interpret and follow directions, analyze and evaluate information and solutions.

- Works as a team member
- Diagnose the problem
- Identify alternative and their consequences
- Compare/Contrast the advantage and disadvantage of alternative
- Evaluate results of actions taken

Research

Student will discover and interpret information regarding various subjects and topics during the course. Compose and orally present information for a variety of situations utilizing appropriate technology. The World Wide Web, along with classroom reference books will be the matter investigated.

Technology

Students will understand and adapt to changing technology by identifying, learning and applying new skills.

- Demonstrate the ability to use personal computers for loading and retrieving data, information gathering, measurements and writing.
- Understand the importance of lifetime learning in adapting to changing technology.

Ethics

Students will understand proper ethics in the classroom.

- Demonstrate social and ethical responsibilities regarding equipment and others work.
- Demonstrate ethical choices in situations regarding choice of topics, music and videos published in Web Pages.

Leadership

- Students understand effective leadership styles, key concepts of group dynamics, team and individual decision making, the benefits of workforce diversity, and conflict resolution.
- 9.1 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace settings.

- 9.3 Understand how to organize and structure work individually and in teams for effective performance and the attainment of goals

III. CONTENT / TIMELINE / PERFORMANCE STANDARDS

The activities within this course may vary by instructor; the following are essential elements that must be covered.

HTML Basics

Understand, identify, and apply the syntax ob basic and advanced HTML document tags. Use tags with the accompanying parameters.

Multi-Media

Using music, video, sound, and images to enhance page, set tone, and attract viewers.

Design Document

Create a blue print of the web site, defining the message, audience, resources, purpose, scope and thumbnail sketch of site.

Web Page Publishing

Publish a Web Site, using free hosting services. Be able to explain and present the process.

Weekly Warm-ups

Instructor and student generated, daily warm-up's is a 5 to 10 minute research on the Internet regarding various topics.

Special Note: All **Bold** standards are California English-Language Art Standards
All Underlined standards are California Mathematics Content Standards
All *Italics* standards are Business Education Standards
All ***Bold Italics*** standards are Industrial and Technology Standards

FIRST SEMESTER

First Six Weeks

Unit 1:1 Orientation: Students are introduced to Advanced Technology careers associated with certifications in the industry and courses available.
Activity: Each student is to document a Career Path.

- **1.0 Written and Language Conventions – Grade 11 – 12**
  - **1.2 Produce legible work that shows correct usage**
- *1.3 Career Exploration*
  - *1.3.3 Goal Setting: Identify steps for goals and write personal goals and objectives*

Unit 1:2 It Model: To understand the overall objective of Information Technology (IT).
Activity: The student identifies, selects and solves an IT problem, using the IT model.

- **1.0 Writing Strategies - Grade 11 – 12**
  - **Structure and support ideas/arguments with examples**
- 3.0 Grade 7 Mathematical Reasoning

- 3.1 Evaluate the reasonableness of the solution in context of the original situation

- *4.1 Computer Science and Information Technology*
  - *4.1.4Knowledge of management and Business Processes*

Unit 2: 1 Beginning **HTML:** Introduction to the Internet and Hypertext Mark-up Language.
Activity: The students practice, recognize and demonstrate the various differences in HTML codes and parameters.

- **1.0 Writing Strategies - Grade 9 -10**
  - **1.5 Synthesize information from multiple sources**

- **2.0 Writing Applications (Genres and their Characters) Grade 9 -10**
  - **2.6 Write technical documents**
    - **Report logically and correctly**

- *1.0 Business Core*
  - *1.6.1 Applications – Utilize a variety of software programs.*

- 1.0 Grade 7 Mathematical Reasoning
  - 1.3 Determine when and how to break a problem into simpler parts

- 2.0 Grade 7 Mathematical Reasoning
  - 2.2 Apply strategies and result from simpler problem to more complex problems

Unit 2:2 Copyright Laws: Basic Design Rules and Copyright Laws as it relates to Ethical Internet Use and Web Design.
Activity: The student demonstrates the proper way to cite information within a Web Page.

- **1.0 Writing Strategies – Grades 9 - 10**
  - **1.6 Integrate quotations and citations into writing**

- *4.0 Computer Science and Information Technology*
  - *4.0.1 Business Ethics*

Weekly Warm-ups: Instructor and student generated, daily warm-up's are a 5 to 10 minute research on the Internet regarding various topics

Second Six Weeks

Unit 3:1 Design Document: Stepping out the blue print for the web page. **Activity:** Create a Design Document for the First Project. The Design Document will include sections on Brainstorming, message of page, audience the page is written for, resources and material to cite within content and thumbnail sketch.

- **1.0 Writing Strategies Grades 9 - 10**
  - **1.5 Synthesize information from multiple sources**

- **2.0 Reading Comprehension (Focus on Informational Materials)**

Grades 9 - 10
- **2.4 Synthesize content; paraphrase and connect ideas**

- **1.0 Writing Strategies Grades 11 –12**
  - **1.7 Use systematic strategies to organize and record information**

- ***Grades 11-12 Standard 1: Graphic Design***
  Students will understand the application of basic graphic design principles to achieve specific goals. They will produce thumbnail sketches, rough layouts, and a comprehensive layout for a printed product.

Unit 3:2 Create a Web Page: Apply the coding necessary to complete the blue provided in the Design Document.
Activity: Using the guideline of the Design Document created, develop a Web Site for the audience identified, using the rubric for HTML requirements.

- **2.0 Reading Comprehension**
  - **2.6 Follows technical directions**

- *4.1Computer Science and Information Technology*
  - *4.1.2 Computer Applications – Identify, select and use a variety of business and industry standard application software.*

  - *4.1.5 Program Design and Development – Identify programming models and data elements including the development of user-friendly systems.*

Weekly Warm-ups: Instructor and student generated, daily warm-up's is a 5 to 10 minute research on the Internet regarding various topics

Third Six Weeks

Unit 4:1 Java Script*:* Introduction to Java Script and proper use and placement.
Activity: The student using the Internet as a resource applies a java script to a page.

- *4.3 Computer Science and Information Technology*

  - *4.31 Computer Applications – Identify, select and use a variety of business and industry standard application software.*

- **2.0 Reading Comprehension**
  - **2.6 Follows technical directions**

Unit 4:2 Plug-Ins: Understanding Multimedia using helper applications, embedding sound, background sound and controlled sound.
Activity: Using various Multimedia resource pages, the student applies Appropriated music, played as embedded, background or controlled.

- **1.0 Writing Strategies - Grade 9 –10**
  - **1.4 Synthesize information from multiple sources**

- *4.3 Computer Science and Information Technology*
  - *4.1.4 Computer Applications – Identify, select and use a variety of business and industry standard application software*

Unit 5:1 Design Document/Idea Sheet*:* Create a blue print of School Web Site.
Activity: Research educational instructions on the Internet for new ideas in coding. Create an idea sheet with design features from 10 different geographical locations in the United States.

- **2.0 Reading Comprehension Grades 9 - 10**
  - **2.1 Analyze workplace documents**

- **1.0 Writing Strategies - Grade 9 –10**
  - **1.4 Synthesize information from multiple sources**

- ***Grades 11-12 Standard 1: Graphic Design***
  Students will understand the application of basic graphic design principles to achieve specific goals. They will produce thumbnail sketches, rough layouts, and a comprehensive layout for a printed product.

Unit 5:2 School Web Site: Code the HTML for the project.
Activity: Using the guideline of the Design Document created, develop a Web Site for the audience identified, using the rubric for HTML requirements, adding two different type of Java Script.

- **2.0 Reading Comprehension**
  - **2.6 Follows technical directions**

- *4.2 Computer Science and Information Technology*
  - *4.12 Computer Applications – Identify, select and use a variety of business and industry standard application software.*
  - *4.1.5 Program Design and Development – Identify programming models and data elements including the development of user-friendly systems.*

Weekly Warm-ups: Instructor and student generated, daily warm-up's is a 5 to 10 minute research on the Internet regarding various topics

SECOND SEMESTER

First Six Weeks

Unit 6:1 Video: Introduction to Video clips within HTML for demonstration.
Activity: Create a Design Document for a Web Site that demonstrates an action. Write a script, produce and direct the video.

- **1.0 Writing Strategies Grades 11 –12**
  - **1.7 Use systematic strategies to organize and record information**
- **1.0 Writing Strategies - Grades 9 –10**
  - **1.4 Synthesize information from multiple sources**
- ***Grades 11-12 Standard 1: Graphic Design***
  Students will understand the application of basic graphic design principles to achieve specific goals. They will produce thumbnail sketches, rough layouts, and a comprehensive layout for a printed product.

Unit 6:2 Video Web Page: Code the HTML**.**
Activity: Using the guideline of the Design Document created, develop a Web Site for the audience identified, using the rubric for HTML requirements,

- **2.0 Reading Comprehension Grades 9 - 10**
  - **2.0 Follows technical directions**
- *4.1 Computer Science and Information Technology*
  - *4.1.2 Computer Applications – Identify, select and use a variety of business and industry standard application software.*
  - *4.1.5 Program Design and Development – Identify programming models and data elements including the development of user-friendly systems.*

Weekly Warm-ups: Instructor and student generated, daily warm-up's is a 5 to 10 minute research on the Internet regarding various topics

Second Six Weeks

Unit 7:1 Cascade Style Sheets*:* Introduction to Cascade Style Sheets (CSS); advantages, setting up and using Internal CSS, and External CSS.
Activity: The instructor provides the students with Heading, Image, and Paragraph elements. Once the students grasp the concept of CSS, the students must create five from their own research.

- **2.0 Reading Comprehension Grades 9 - 10**
  - **2.6 Follows technical directions**

- **1.0 Writing Strategies - Grades 9 –10**
  - **1.4 Synthesize information from multiple sources**

- ***Grades 11-12 Standard 1: Graphic Design***
  Students will understand the application of basic graphic design principles to achieve specific goals. They will produce thumbnail sketches, rough layouts, and a comprehensive layout for a printed product.

Unit 7:2 Forms: Developing forms using data representations, email, and submit commands. Applying passwords, counters, slicing images, and labeling. (Small projects for these extras in the area of implementation and experimentation)
Activity: The student creates a Internet Interactive form to take applications for Student of the Month.

- **2.0 Reading Comprehension Grades 9 - 10**
  - **2.6 Follows technical directions**

- **1.0 Writing Strategies - Grades 9 –10**
  - **1.4 Synthesize information from multiple sources**

- 2.0 Students use strategies, skills and concepts in finding solution:
  - 2.3 Apply strategies and result from simpler problem to more complex problems.

Weekly Warm-ups: Instructor and student generated, daily warm-up's is a 5 to 10 minute research on the Internet regarding various topics

Third Six Weeks

Unit 7 Final Project: Building a town.
Activity: Students are given a random business. A town is selected or created, with population, demographic and geographical region agreed upon by the class. The student is to create a Design Document and Web Site according the HTML rubric, which includes all HTML codes, and extras.

- **2.0 Reading Comprehension Grades 9 – 10**
  - **2.1 Analyze workplace documents**
  - **2.6 Follows technical directions**

- **1.0 Writing Strategies - Grade 9 –10**
  - **1.4 Synthesize information from multiple sources**

- ***Grades 11-12 Standard 1: Graphic Design***
  Students will understand the application of basic graphic design principles to achieve specific goals. They will produce thumbnail sketches, rough layouts, and a comprehensive layout for a printed product.

IV. STUDENT ASSESSMENT

Teacher generated activities, projects, writing, quizzes, tests and final exams.

The use of rubrics to grade projects, by teacher and students

V. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS/SOFTWARE

The designated textbooks, materials, and technologies meet the state standards for this content area.

A. Web Simple Editor – Arachnophilia
B. Microsoft Word
C. Microsoft Power Point

VI. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF CONTENT STANDARDS FOR ALL LEARNING STYLES

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence (learning styles) and correspond with lessons with the primary text

LINGUISTIC LEARNERS
Creative writing
Oral reports
Essays
Dramatic readings/performances
Speeches
Storytelling

LOGICAL MATHEMATICAL LEARNER
Graphic organizers
Timeline
Prediction exercises
Models
Computer project

SPATIAL LEARNER
Drawing and painting

BODILY-KINESTHETIC LEARNER
Demonstration speeches
Experiments
Impersonations, role-playing

INTERPERSONAL LEARNER
Discussions
Cooperative and collaborative projects
Peer coaching
Conducting interviews
Simulation activities

INTRAPERSONAL LEARNER
Response journal
Learning logs
Observations
Photo essays
Autobiographical stories
Written reports

Maps and flow charts
Collages

MUSICAL LEARNER

Musical plays and compositions

Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.		
	COURSE NAME:	Word Processing 2
	Grade Level:	10-12
	Prerequisite:	Word Processing 1 with grade of "C" or better
	Duration:	One Year (2 semesters)
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	COS Business 160(3 units) for grades 11 and 12 only
	Text – Board Adoption:	
	Textbook Name:	Keyboarding with Computer Applications
	Publisher:	McGraw-Hill Glencoe
	Publication Year/Edition:	2007
	ISBN – Student Text:	978-0-07-869316-8
	ISBN – Teacher Text:	978-0-07-873363-5

II. COURSE DESCRIPTION

An advanced course that will teach students word processing concepts and applications, and give students the competitive edge for employment. Students will prepare a variety of documents and master specialized software functions. Advanced document formatting generating complex documents such as enhanced reports and tables are included. Students will use decision-making skills to evaluate document formats and mailability. Applying written and oral communication skills and demonstrating quality and efficiency in document production are emphasized. This course will teach students to work effectively in a computerized word processing office environment. This course will enable students with high-level keyboarding skills to broaden their computer experience. It will also enable the students to become more versatile. Industry-standard word processing will be used for this course. Speed and accuracy standards will be included. **College of the Sequoias 2 + 2 Articulation Agreement is available; students will receive college credit after successful completion if taking the class as a junior or senior.**

III. CENTRAL INTELLECTUAL PURPOSE

Communications

Reading

District English Language Arts Focus Standards:
Reading 2.3 Generate research questions.
Reading 2.4 Synthesize content; paraphrase and connect ideas.

English Language Arts Reading 2.6 Follow technical directions.
English Language Arts Reading 2.1 Analyze workplace documents.

Writing

English Language Arts Writing 1.7 Use appropriate style manual conventions.
English Language Arts Writing 2.5 Write business letters.

Critical Thinking/Problem Solving

Business Standard 1.6: Information Technologies
1.6.7 Solve problems effectively by utilizing appropriate technology.

Research

Business Standard 1.6: Information Technologies
1.6.7 Solve problems effectively by utilizing appropriate technology.

Technology

Business Standard 1.6: Information Technologies

Ethics

Business Standard 1.2: Business Environment
1.2.1 Define business ethics and explain the importance of ethical standards and social responsibilities in the classroom/business environment.

Business Standard 1.7: Leadership Development
1.7.4 Demonstrate self-motivation and use motivational techniques in a classroom setting**.**

1.7.5 Describe personal qualities such as integrity, loyalty, honesty, and self esteem; discuss their importance in being an effective leader and team member.

Knowledge of and adherence to school/classroom rules, with particular emphasis on honesty policy, respect for self and others
Emphasis on personal responsibility for attentiveness, constructive use of class time, diligence in daily assigned work and projects

IV. CONTENT/TIMELINE/ PERFORMANCE STANDARDS

SPECIAL NOTE: Standards are the **California Business Education Standards** for California Public Schools. All activities in Word Processing address the following standards:

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.5 Information resources—Use tutorials as a resource to access information.
- **Business Standard 1.3: Career Preparation, Job Acquisition and Retention**
- **Business Standard 1.5: Employability Skills**

*All **BOLD** English Language Arts (ELA) state standards are also **CA HS EXIT EXAM** standards.*

FIRST SEMESTER

Weeks 1-6

Students will learn and practice:

Keyboarding—
Alphabetical,
Alphanumeric,
Symbols,
Numeric material,
Stroking speed --reinforce, remediate, and build
Stroking accuracy
Skill builders,
Entry and exit timings to gauge a student's progress

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.5 Information resources—Use tutorials as a resource to access information.

Daily Activities

Students practice lines for speed for ten minute.
Students routinely take timed writing for speed and accuracy.
Students will calculate net words per minute on timed writing.

- **Number Sense CAHSEE Grade 7, 1.2** Add, subtract, multiply and divide rational numbers and take positive rational numbers to whole number powers.

Activities

Students will build speed and accuracy on the keyboard by learning to stroke alphabetic keys, numeric keys, and symbol keys.
Students will review information and concepts used in Word Processing I.

- **ELA Reading 2.6 Follow technical directions.**

Students will access software to increase speed and accuracy.

- **Number Sense CAHSEE Grade 7, 1.2** Add, subtract, multiply and divide rational numbers and take positive rational numbers to whole number powers.
- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.5 Information resources—Use tutorials as a resource to access information.

Weeks 7-12

Students will learn and practice:

Table Formatting Skill
center page, decimal tabs
right align, center text horizontally and vertically
headings, source notes, multiple line entries,
organize, format, unarranged copy.

Letter and Memo Formatting Skills
block personal-business letters
block business letters
modified block letters
standard memos
simplified memos
second page headings
special letter parts
organize, format, unarranged copy.

Report Formatting Skill
unbound reports
bound reports
bullets, number expression guides
endnotes

- **Business Standard 1.5: Employability Skills**
  - 1.5.7 Time Management—Prioritize work to fulfill responsibilities, meet deadlines, and achieve personal satisfaction**.**
- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents
  - 1.6.5 Information resources—Use tutorials as a resource to access information.
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology
- **ELA Reading 2.6 Follow technical directions.**

Daily Activities

Students practice lines for speed for ten minute.
Students routinely take timed writing for speed and accuracy.
Students will calculate net words per minute on timed writing.

- **Number Sense CAHSEE Grade 7, 1.2** Add, subtract, multiply and divide rational numbers and take positive rational numbers to whole number powers.

Activities

Students will access Tutorial software to increase speed and accuracy

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents

Students will format unbound reports with endnotes from unarranged copy
Students will format tables with source notes and multiple headings from unarranged copy.
Students will format standard and simplified memos from unarranged copy.

- **Business Standard 1.6: Information Technologies**
  - 1.6.3 Document Processing—Create, format and produce documents

Students will key practice lines with incorrect word usage and use problem solving skills to correctly key the lines.

- **Business Standard 1.6: Information Technologies**
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology
- **ELA Written/Oral 1.1 Identify and correctly use clauses (e.g., main and subordinate), phrases (e.g., gerund, infinitive, and participial), and mechanics of punctuation (e.g., semicolons, colons, ellipses, hyphens).**
- **ELA Written/Oral 1.3 Demonstrate an understanding of proper English usage and control of grammar, paragraph and sentence structure, diction and syntax.**
- **ELA Reading 2.1 Analyze workplace documents.**

Language and Writing Skills—Proofreading symbols, on-screen editing, rough-draft copy, composition, exclamation point, question mark, apostrophe, word selection.

- **California Business Communication Standard 1.1 Business Communications**
  - 1.1.2 Effectiveness—Compose written business communications that demonstrate the use of critical thinking, decision making, and problem solving skills.
- **ELA Reading standard 2.1** Analyze the structure and format of functional workplace documents, including the graphics and header, and explain how authors use the features to achieve their purpose.
- **ELA Reading 2.6 Follow technical directions.**

Weeks 13-18

Students will:

Learn to format and key a two-page letter.
Format letters from form paragraphs using the merge feature.
Format a bound enhanced report with a table.
Use MLA—style reports.
Improve skill in formatting enhanced tables with leaders.

Apply language skills including punctuation, word usage, hyphen, colon, quotation marks.

- **Business Standard 1.6: Information Technologies**
  - 1.6.3 Document processing—Create, format and produce documents
- **ELA Written/Oral 1.1 Identify and correctly use clauses (e.g., main and subordinate), phrases (e.g., gerund, infinitive, and participial), and mechanics of punctuation (e.g., semicolons, colons, ellipses, hyphens).**

Daily Activities

Students practice lines for speed for ten minute.
Students routinely take timed writing for speed and accuracy.
Students will calculate net words per minute on timed writing.

- **Number Sense CAHSEE Grade 7, 1.2** Add, subtract, multiply and divide rational numbers and take positive rational numbers to whole number powers.

Activities

Students will access Tutorial software to increase speed and accuracy

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents
- **Business Standard 1.6: Information Technologies**
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology

Students will format enhanced tables with dot leaders using right alignment feature.
Students will format enhanced reports with tables using MLA style.

- **ELA Writing 1.7 Use appropriate style manual conventions.**

Students will format itineraries and agendas from unarranged copy.

- **Business Standard 1.5: Employability Skills**
  - 1.5.7 Time Management—Prioritize work to fulfill responsibilities, meet deadlines, and achieve personal satisfaction.

  Business Standard 1.6: Information Technologies
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents

Language and Writing Skills—
Proofreading symbols, on-screen editing, rough-draft copy, composition, capitalization, number expression, punctuation, grammar, word-division, word selection.

- **California Business Communication Standard 1.1 Business Communications**
  - 1.1.2 Effectiveness—Compose written business communications that demonstrate the use of critical thinking, decision making, and problem solving skills.

- **ELA Reading 2.1** Analyze the structure and format of functional workplace documents, including the graphics and header, and explain how authors use the features to achieve their purpose.
- **ELA Reading 2.6 Follow technical directions.**

SECOND SEMESTER

Weeks 1-6

Students will learn and practice:

Composing a resume
Formatting a resume
Formatting an application letter
Composing an interview follow-up-letter
Processing office employment documents
Office simulation—keying from script and rough draft
Students work both individually and in teams to complete a comprehensive career research project.

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.5 Information resources—Use tutorials as a resource to access information.
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology
  - 3.6 Career Planning and Management—Know important strategies for self-promotion in the hiring process, such as job applications, resume writing, interviewing skills, and preparation of a portfolio.
  - 9.3 Leadership and Teamwork 9.3—Understand how to organize and structure work individually and in teams for effective performance and the attainment of goals.

Daily Activities

Students practice lines for speed for ten minute.
Students routinely take timed writing for speed and accuracy.
Students will calculate net words per minute on timed writing.

- **Number Sense CAHSEE Grade 7, 1.2** Add, subtract, multiply and divide rational numbers and take positive rational numbers to whole number powers.

Activities

Students will access Tutorial software to increase speed and accuracy

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
- **ELA Reading 2.6 Follow technical directions.**

Students will prepare resume, letter of application, job application, and follow-up-letter.

- **ELA Writing 2.5 Write business letters:**
  a. Provide appropriate information.
  b. Use appropriate vocabulary, tone, and style.
  c. Highlight central ideas.
  d. Follow conventional style

Activity: Students will write and key letters of applications, complete actual job applications, and compose a personal resume.

Key ELA Standard:

- **R 2.6 Critique the logic of documents by examining sequence of information and procedures in anticipation of possible reader misunderstandings**
- **W2.5 Write business letters, job applications, and resumes**
- **W1.9 Revise writing to improve logic and coherence in conveying meaning.**

***Assessment:* final copy of the letter of application; Final copy of job applications; personal resume**

National Business Standards:

- **I. Foundations of Communication A) Oral communication C) Written communication**
- **IV. Employment Communication: Level 2 Performance Expectations; Level 3 performance Expectations; level 1; level 4**

Students will complete an office simulation improving their document processing skills.
Students will enhance documents with borders, fonts, bolding, underlining.

- **Business Standard 1.5: Employability Skills**
  - 1.5.7 Time Management—Prioritize work to fulfill responsibilities, meet deadlines, and achieve personal satisfaction.
- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents

Weeks 7-12

Students will learn and practice

Integrating word processing skills to create professional looking documents.
Increasing keyboarding skill on straight, rough-draft, and script copy
Improving language skills and work methods.
Formatting enhanced letters
Formatting enhanced tables
Formatting enhanced unbound reports.

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents
  - 1.6.5 Information resources—Use tutorials as a resource to access information.
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology
- **ELA Reading 2.6 Follow technical directions.**

Daily Activities

Students practice lines for speed for ten minute.
Students routinely take timed writing for speed and accuracy.
Students will calculate net words per minute on timed writing.

- **Number Sense CAHSEE Grade 7, 1.2** Add, subtract, multiply and divide rational numbers and take positive rational numbers to whole number powers.

Activities

Students will access tutorial software to increase speed and accuracy

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents

Students will format unbound reports with textual citations, endnotes, bibliography, and title page.

- **ELA Writing 2.5 Write business letters:**
  a. Provide appropriate information.
  b. Use appropriate vocabulary, tone, and style.
  c. Highlight central ideas.
  d. Follow conventional style

Students will format block and modified block letters with open and mixed punctuation.

- **ELA Written/Oral 1.1 Identify and correctly use clauses (e.g., main and subordinate), phrases (e.g., gerund, infinitive, and participial), and mechanics of punctuation (e.g., semicolons, colons, ellipses, hyphens).**

Students will format tables with single-line blocked headings.

- **Business Standard 1.5: Employability Skills**
  - 1..5.7 Time Management—Prioritize work to fulfill responsibilities, meet deadlines, and achieve personal satisfaction.
- **Business Standard 1.6: Information Technologies**
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology
- **ELA Written/Oral 1.3 Demonstrate an understanding of proper English usage and control of grammar, paragraph and sentence structure, diction and syntax.**

Language and Writing Skills—Proofreading symbols, on-screen editing, rough-draft copy, composition, capitalization, number expression, punctuation, grammar, word-division, word selection.

- **California Business Communication Standard 1.1 Business Communications**
  - 1.1.2 Effectiveness—Compose written business communications that demonstrate the use of critical thinking, decision making, and problem solving skills.
- **Reading standard 2.1** Analyze the structure and format of functional workplace documents, including the graphics and header, and explain how authors use the features to achieve their purpose.

Weeks 13-18

Students will format:

Enhanced Reports
Enhanced Outlines
Minutes of a Meeting
News Releases
Table Layout
Process Long Letters
Prepare Simulated E Mail Messages
Use spreadsheet functions

- **Business Standard 1.5: Employability Skills**
  - 1..5.7 Time Management—Prioritize work to fulfill responsibilities, meet deadlines, and achieve personal satisfaction
- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents
  - 1.6.5 Information resources—Use tutorials as a resource to access information.
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology
- **ELA Written/Oral 1.1 Identify and correctly use clauses (e.g., main and subordinate), phrases (e.g., gerund, infinitive, and participial), and mechanics of punctuation (e.g., semicolons, colons, ellipses, hyphens).**

Daily Activities

Students practice lines for speed for ten minute.
Students routinely take timed writing for speed and accuracy.
Students will calculate net words per minute on timed writing.

- **Number Sense CAHSEE Grade 7, 1.2** Add, subtract, multiply and divide rational numbers and take positive rational numbers to whole number powers.

Activities

Students will access Tutorial software to increase speed and accuracy

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology
- **ELA Reading 2.6 Follow technical directions.**

Students will format reports with footnotes, endnotes, textual citations, title page, table of contents.

- **ELA Writing 1.7 Use appropriate style manual conventions.**

Students will process correspondence under time pressure.

- **Business Standard 1.5: Employability Skills**
  - 1..5.7 Time Management—Prioritize work to fulfill responsibilities, meet deadlines, and achieve personal satisfaction

Students will process simulated e-mail messages.
Students will use spreadsheet commands to develop a worksheet.

- **Business Standard 1.6: Information Technologies**
  - 1.6.1 Utilize a software program to produce data
  - 1.6.2 Demonstrate proper use and care of equipment
  - 1.6.3 Document processing—Create, format and produce documents
  - 1.6.7 Problem Solving—Solve problems effectively by utilizing appropriate technology

Language and Writing Skills—
Proofreading symbols, on-screen editing, rough-draft copy, composition, capitalization, number expression, punctuation, grammar, word-division, word selection.

- **California Business Communication Standard 1.1 Business Communications**
  - 1.1.2 Effectiveness—Compose written business communications that demonstrate the use of critical thinking, decision making, and problem solving skills.
- **ELA Reading 2.1** Analyze the structure and format of functional workplace documents, including the graphics and header, and explain how authors use the features to achieve their purpose.

V. STUDENT ASSESSMENT

- Weekly scoresheets, assessing quality and quantity production, performance tests, progress checks, application activities, skill building scales, sustained production timings

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS / SOFTWARE

The textbooks, materials, and technologies meet the state standards for this content area.

Keyboarding and Information Processing by Robinson, Hoggatt, Shank, Beaumont, Crawford, Erickson, Complete Course, Sixth Edition, South-Western Publishing Co.

SkillBuilding by Eide, Rieck, Klemin; Complete Course, Second Edition, Glencoe (McGraw-Hill) Company

Office 2000 A Comprehensive Approach, by Hinkle, Tobias, Stewart, Marple, Fischer-Larson; Glencoe McGraw-Hill Companies, 2000.

Micro Type Pro

Microsoft Office 2000

Excel 2000

Teacher/student resources

Internet web sites

- ERIC Clearinghouse on Reading, English, and Communication
  http://www.indiana.edu/~enc_rec
- Kairos: A Journal for Teachers of Writing in Webbed Environments
  http://english.ttu.edu/kairos
- Online Innovation Institute (OII): Projects to use in the classroom that utilize technology in the Four Directions for Lifelong Learning
  http://www.oii.org
- TeachNet (Teacher-designed projects and activities by subject)
  http://www.teachnet.org/docs.cfm

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF BUSINESS CONTENT STANDARDS FOR ALL LEARNING STYLES

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence (learning styles).

LINGUISTIC LEARNER

creative writing
oral reports
essays
dramatic readings/performances
debates and speeches
storytelling

LOGICAL/MATHEMATICAL LEARNER

graphic organizers
timeline
prediction exercises
coded messages
models
computer project
science experiments

SPATIAL LEARNER

drawings and paintings
comic strips
maps and flow charts
dioramas, displays, and murals
collages
photography activities

MUSICAL LEARNER

musical plays and compositions
songs, jingles, and melodies
playing musical instruments

BODILY-KINESTHETIC LEARNER

demonstration speeches
experiments
impersonations, role playing
using gestures, pantomime

INTERPERSONAL LEARNER

discussions
cooperative and collaborative projects
peer coaching
conducting interviews
simulation activities

INTRAPERSONAL LEARNER

response journals
learning logs
observations

photo essays
autobiographical stories
written reports

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Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.	**COURSE NAME:**	Beginning Wood
	Grade Level:	9-12, 10-12 (HW)
	Prerequisite:	Intro to Industrial processes (HW)
	Duration:	One Year (2 semesters)
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	n/a
	Text – Board Adoption:	
	Textbook Name:	Wood Technology and Processes
	Publisher:	McGraw-Hill Glencoe
	Publication Year/Edition:	2002, 5th Edition
	ISBN – Student Text:	0-07-822411-x
	ISBN – Teacher Text:	0-07-822412-8

II. COURSE DESCRIPTION

Wood 1 is a basic course in wood manufacturing. The students learn the proper use and name of the common hand and power tools used in the woodworking industry. Students learn the common wood joints, use and size of fasteners, use and characteristics of common woods, and how to finish wood. Students learn of the lumber industry, geographical area from which lumber is obtained and the process of milling and drying.

III. CENTRAL INTELLECTUAL PURPOSE

Communications

Reading: comprehension as shown through class discussions and written exercises in a variety of genres, including essay, short reports, and safety entrance test

Writing: instruction/review/practice of writing wood manufacturing facts and safety rules. Analysis of units of wood manufacturing book.

Speaking: Class/group discussion of machine operations and safety procedures, wood-manufacturing practices. Oral presentations in each area.

Critical Thinking/Problem Solving

Comprehension of safety rules and wood manufacturing practices, ability to recognize and analyze a wood manufacturing need, solution set-up, attack methods, and wood manufacturing solution strategies.

Research

Utilizing various sources of information from classroom references, school library, and computer network.

Technology
Students will demonstrate proficiency with available classroom technology to complete assigned shop laboratory projects.

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Ethics
Students will demonstrate personal, social, and civic responsibility while working in the laboratory.

IV. CONTENT/TIMELINE/ PERFORMANCE STANDARDS

California State Standards – Industrial and Technology Education – Grades Nine Through Twelve are listed in detail when first introduced or emphasized and then continued in abbreviated form throughout the year. English Language Arts Standards (ELA), Mathematics standards, and Social Studies are included where applicable.

NOTE Each semester includes a sign language activity/assignment that *addresse*s and *assesses* Focus Standards from English language Arts (ELA) and Mathematics. These activities will be identified by this text box.

FIRST SEMESTER

Unit 1 Safety and First Aid (3 weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Visuals, accepting environment, Lecture, Demonstration
- Guided Instruction: Working in a groups, demonstrations
- Metacognition & Authentic Assessment: Student Demonstration and written Safety Test

A. Careers and Leadership in the workplace
B. Safe work habits
C. Accident prevention
D. Potential hazard identification
E. Handling emergencies
F. OSHA
G. Maintaining a clean shop

Key Activities
• 13 Safety Test

Activity: Reading the unit in the book, answering review questions. Demonstration on tool safety. They will be reading the rules of the machine and be given a demonstration. Students will be able to write down in their own words the safety rules for one machine. Worksheet Review

Key ELA Standard: Construction safety – Vocational Education
R 2.4 Synthesize content by paraphrasing and connecting ideas.

W1.4 Develop main idea with supporting evidence.

Assessment: This will assess the standard of synthesizing content by paraphrasing a set of ideas that make the shop safe.

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Foundation Standard 3.0: Students understand how to make effective decisions, use career information, and manage personal career plans.

Foundation Standard 3.1: Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.

Foundation Standard 9.2: Understand the ways in which preprofessional associations, such as SkillsUSA, and competitive career development activities enhance academic skills, promote career choices, and contribute to employability

Standard 6: Safety
Students will understand the value and necessity of practicing occupational safety in the construction industry. They will demonstrate content proficiency by:

passing required safety tests
demonstrating the safe use of hand tools and power tools
explaining the roles and responsibilities of the various governmental safety agencies
using safe work practices
receiving exposure/training in CPR and basic first aid

Reading

2.3 Generate research Questions
2.4 Synthesize content; paraphrase and connect ideas

Geometry

16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line
22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections

Unit 2 Tools and Machines (4+ weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Visuals, accepting environment, Lecture, Demonstration
- Guided Instruction: Working in a groups, demonstrations
- Metacognition & Authentic Assessment: Authentic assessment (demonstration)

A. Identification and Operation

1 Saws
2 Drills
3 Jointer
4 Planer
5 Lathes
6 Sanders
7 Shapers/routers

B. Hand Tools

C. Safety Practices
D. Proper storage techniques

Key Activities

- Individual student demonstration of knowledge and use of machines and tools, and safety practices related to each.

Standard 2: Hand Tools
Students will understand safe and appropriate use of hand tools common to the construction industry (hammers, pliers, saws, wrenches, etc.). They will demonstrate content proficiency by:

- identifying tools commonly used in specific trades
- correctly using tools in their intended application
- demonstrating basic care and maintenance of hand tools

Standard 122: Carpentry Safety Students will understand the importance of safety and safe work practices in carpentry (involving ladders and scaffolds, fire safety, tools and machines, etc.). They will demonstrate content proficiency by:

- demonstrating knowledge of carpentry safety and safe work practices
- exhibiting a positive attitude toward safety
- demonstrating the ability to use tools, machines, and materials safely in carpentry activities

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Standard 123: Carpentry Tools and Machines
Students will understand the names, functions, and safe uses of the tools and machines used in carpentry (hammers, routers, radial arm saws, etc.). They will demonstrate content proficiency by:

- identifying the tools and machines used by the carpenter
- using the tools and machines safely and accurately in carpentry activities

Algebra

- 3.0 Students solve equations and inequalities involving absolute values

Number sense

- 2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division:
- 2.1 Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation
- 2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fraction

Geometry

- 16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.

Unit 3 Applied Mathematics Specialization (3 + weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, graphic organizers
- Explicit Instruction: Students are explained and shown how measurement is used
- Guided Instruction: Instructor demonstrates measurement and the students do it using Realia, Manipulatives, and working in groups
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper use of measurement

A. Measurement Calculations
1 Rulers, tapes, and squares
2 Calipers and micrometers
3 Board feet, cubic and liquid measures
4 U.S. and metric measurements units—linear, volume, mass

Key Activities

- Worksheets are given daily implementing measurement.
- Quiz's every other day and a test on the fifth day

Activity: Worksheet, Problems on Board

Students will be able to perform simple mathematic skills of addition, subtraction, multiplication and division of fractions and decimals using measurements. Students are introduced to measurements by introducing a ruler to each student and the how it is broken into segments (i.e., ½, ¼, 1/8, 1/16, 1/32)

Students are given worksheets and board assignments to practice new skills of reading rulers.

Student progressively gets more difficult problems which require addition, subtraction, multiplication and division of factions and decimals.

Key Math Standard:

- **Measurement/Layout**
- **Algebra Standards: 1. Basic Operation: add, subtract, multiply and divide**

Assessment: Test of 40 problems requiring addition, subtraction, multiplication and division. Test is graded by teacher and students.

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Unit 4 Materials and Supplies (2 weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: repeat instructions, Keeping instruction simple
- Guided Instruction: Demonstration, graphic organizers
- Metacognition & Authentic Assessment: Students demonstrate and by identifying both on paper and verbally

A. Identify and use of materials
B. Properties of Materials
C. Hardware and fasteners
D. Abrasives

Key Activities

- Unit Questions
- Identification of materials
- Proper use of hardware and fasteners
- Identify different grades of sandpaper and know their proper use.

Standard 4: Construction Business Processes

Students will understand procedures and processes as they occur in the construction industry. They will demonstrate content proficiency by:

- estimating materials using blueprints and specifications
- constructing projects accurately from blueprints and specifications
- planning a sequence of events in a construction project
- solving common construction problems using construction codes and building standards
- keeping accurate records of construction progress

Unit 5 Planning and Layout (2 weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Visuals, use of manipulatives, accepting enviroment
- Guided Instruction: Working in a groups, demonstrations
- Metacognition & Authentic Assessment: Authentic assessment

A. Print reading
B. Estimating
  - Bill of materials

C. Planning
  - Plan of procedure
    - Layout

Key Activities

- Students will write a bill of materials using a set of prints.
- A plan of procedure will be developed by each student using a print and a bill of materials.
- The students will layout the needed sizes on the material.

Standard 124: Carpentry Materials and Supplies
Students will know the names, properties, and appropriate use of materials and supplies used in carpentry (wood, plywood, gypsum board, etc.). They will demonstrate content proficiency by:

- identifying building materials and supplies
- discussing the properties and appropriate uses of building materials and supplies
- demonstrating the ability to safely use building materials and supplies in carpentry activities

Standard 125: Carpentry Activities
Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing, etc.) They will demonstrate content proficiency by:

- identifying procedures, techniques, and processes used in carpentry
- demonstrating the ability to lay out, form, frame, and finish carpentry projects

SECOND SEMESTER

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Unit 6 Production (12 weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Visuals, use of manipulatives, accepting enviroment
- Guided Instruction: Working in a groups, demonstrations
- Metacognition & Authentic Assessment: Authentic assessment, scoring rubric

A. Beginning Level Wood Project

1 Multiple joints used
2 Multiple machines used

3 Multiple hand tools used

B. Beginning Level Wood Project

1 Joints multiple joints used
2 Multiple machines used
3 Multiple hand tools used

C. Joints

D. Gluing and Clamping

Key Activities

- Peg Shelf Project (1st Semester)
- Bread Box Project (2nd Semester)

Standard 5: Construction Project Phases/Systems

Students will understand the variety of building phases/systems used in construction projects. They will demonstrate content proficiency by:

- developing a building plan utilizing given systems common to construction projects
- using tools, processes, and materials appropriate to architectural design and development of construction projects
- using tools, processes, and materials appropriate to site development in construction projects
- using tools, processes, and materials appropriate to structural systems in construction projects
- using tools, processes, and materials appropriate to electrical systems in construction projects
- using tools, processes, and materials appropriate to mechanical systems in construction projects
- using tools, processes, and materials appropriate to finish systems in construction projects

Standard 125: Carpentry Activities

Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing, etc.) They will demonstrate content proficiency by:

- identifying procedures, techniques, and processes used in carpentry
- demonstrating the ability to lay out, form, frame, and finish carpentry projects

Unit 7 Surface Preparation (4 weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Visuals, use of manipulatives, accepting enviroment
- Guided Instruction: Working in a groups, demonstrations
- Metacognition & Authentic Assessment: Authentic assessment

A. Procedures and techniques of sanding
B. Tools
C. Materials

Key Activities

- Students will demonstrate proper surface preparation on their projects. The project will be checked several times by the instructor make sure the student is preparing the surface correctly.

Standard 125: Carpentry Activities

Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing, etc.) They will demonstrate content proficiency by:

- identifying procedures, techniques, and processes used in carpentry
- demonstrating the ability to lay out, form, frame, and finish carpentry projects

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Unit 8 Finishing (2 weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Visuals, use of manipulatives, accepting enviroment
- Guided Instruction: Working in a groups, demonstrations
- Metacognition & Authentic Assessment: Authentic assessment

A. Procedures and techniques of finishing
B. Tools
C. Materials

Key Activities

• Students will demonstrate proper techniques of finishing on their projects.

Standard 125: Carpentry Activities

Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing,etc.) They will demonstrate content proficiency by:

- identifying procedures, techniques, and processes used in carpentry
- demonstrating the ability to layout form frame and finish carpentry projects

Unit 9 Career Development (2 weeks)

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Visuals, use of manipulatives, accepting enviroment
- Guided Instruction: Working in a groups, demonstrations, graphic organizers

Metacognition & Authentic Assessment: Project

A. Opportunities in wood manufacturing
B. Occupational and goal setting
C. Self-appraisal
D. Work values

Key Activities

• Students will develop a three page paper and presentation on a career that is related to Wood or Industrial Technology. They will be able to choose or will be assigned a career to research.

Standard 8: Career Preparation and Planning

Students will understand career preparation and how it applies across all standards for students planning to successfully enter and advance in the construction industry. They will demonstrate content proficiency by developing:

- personal skills – exhibit positive attitudes, self confidence, honesty, perseverance, self-discipline (dependable, reliable, punctual, etc.) and personal hygiene; manage time and balance priorities to demonstrate capacity for life-long learning
- interpersonal skills – work cooperatively with others, share responsibilities, accept supervision and assume leadership roles; demonstrate cooperative working relationships across gender and cultural groups
- thinking and problem solving skills – recognize problem situations; identify, locate, and organize needed information or data; propose, evaluate, and select from alternative solutions
- communication skills – communicate both orally and in writing; listen attentively and follow instructions, requesting clarification or additional information as needed
- employment literacy skills – promote the role of the construction industry in a productive society and the purpose of professional organizations; develop a plan for professional growth across all aspects of the industry, including financial, leadership, and advancement elements
- a career plan – explore options for future learning and employment, including apprenticeship, community college, university, internship, and other training programs

Standard 121: Carpentry Careers
Students will understand the importance of career planning (opportunities, training and educational requirements, career ladder, etc.) and know the careers that are available in carpentry and construction technology. They will demonstrate content proficiency by:
- identifying career opportunities in carpentry and construction technology
- identifying an occupational interest
- developing a career plan including post secondary training options

Writing
- 1.1 Establish and maintain a clear thesis
- 1.4 Develop main ideas with supporting evidence

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Unit 10 Employability (5 days)

SDAIE Instructional Strategies
- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Visuals, use of manipulatives, accepting enviroment
- Guided Instruction: Working in a groups, demonstrations, graphic organizers

Metacognition & Authentic Assessment: Project
A. Job search techniques
B. Occupational goal setting

Key Activities
- Students will research specific jobs and find out the requirements of the job. They will be given a questionnaire to fill out. After the students are finished filling out questionnaire they will have mock interviews with instructor.

Standard 121: Carpentry Careers
Students will understand the importance of career planning (opportunities, training and educational requirements, career ladder, etc.) and know the careers that are available in carpentry and construction technology. They will demonstrate content proficiency by:
- identifying career opportunities in carpentry and construction technology
- identifying an occupational interest
- developing a career plan including post secondary training options

V. STUDENT ASSESSMENT

A variety of authentic assessments will be used such as portfolios, student presentations and projects, and rubric scoring. Quizzes, tests, participation, daily work grades, and mentor evaluations will also be used.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS / SOFTWARE

The designated textbooks, materials, and technologies meet the state standards for this content area.

Text: General Woodworking, 6th edition by Chris H. Groneman, McGrawHill, 1952, 1982

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE INSTRUCTION OF INDUSTRIAL AND TECHNOLOGY EDUCATION CONTENT STANDARDS FOR ALL LEARNING STYLES

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence .

LINGUISTIC LEARNER
oral reports and essays

SPATIAL LEARNER
Drawings, maps, and flow charts

LOGICAL/MATHEMATICAL LEARNER discussions graphic organizers, models cooperative and collaborative projects timeline peer coaching prediction exercises conducting interviews simulation activities

INTERPERSONAL LEARNER

BODILY-KINESTHETIC LEARNER
Building projects

INTRAPERSONAL LEARNER
response journals/learning logs
observations

Hanford Joint Union High School
DISTRICT CURRICULUM GUIDE

I.	**COURSE NAME:**	Advanced Wood
	Grade Level:	10-12, 11-12 (HW)
	Prerequisite:	C or better in Beginning Wood
	Duration:	One Year (2 semesters)
	Credit:	CTE
	Guide – Board Adoption:	Revised: April, 2011
	Course Articulation:	n/a
	Text – Board Adoption:	
	Textbook Name:	Wood Technology and Processes
	Publisher:	McGraw-Hill Glencoe
	Publication Year/Edition:	2002, 5th Edition
	ISBN – Student Text:	0-07-822411-x
	ISBN – Teacher Text:	0-07-822412-8

II. COURSE DESCRIPTION

Advanced Wood is an advanced/intermediate course in wood manufacturing. The students will understand and demonstrate furniture, wood products, and mass production technology processes used in the construction technology. The students learn the proper use and name of the common hand and power tools used in the woodworking industry. Students learn the common wood joints, use and size of fasteners, use and characteristics of common woods, and how to finish wood. Students will participate in the planning, scheduling, producing, packaging, and marketing mass-produced wood products.

III. CENTRAL INTELLECTUAL PURPOSE

Communications

Reading: comprehension as shown through class discussions and written exercises in a variety of genres, including essay, short reports, and safety entrance test

Writing: instruction/review/practice of writing wood manufacturing facts and safety rules. Analysis of units in wood manufacturing book.

Speaking: Class/group discussion of machine operations and safety procedures, wood-manufacturing practices. Oral presentations are given in each area.

Critical Thinking/Problem Solving

Comprehension of safety rules and wood manufacturing practices, ability to recognize and analyze a wood manufacturing need, solution set-up, attack methods, and wood manufacturing solution strategies.

Research

Utilizing various sources of information from classroom references, school library, and computer network.

Technology

Students will demonstrate proficiency with available classroom technology to complete assigned shop laboratory projects.

Ethics

Students will demonstrate personal, social, and civic responsibility while working in the laboratory.

IV. CONTENT/TIMELINE/ PERFORMANCE STANDARDS

SPECIAL NOTE: *All **BOLD** state standards are **CALIFORNIA HS EXIT EXAM** standards. The activities listed correlate with the California State Content standards for Industrial and Technology Education.*

California State Standards – Industrial and Technology Education – Grades Nine through Twelve are listed in detail when first introduced or emphasized and then continued in abbreviated form throughout the year. English Language Arts Standards (ELA), Mathematics standards, and Social Studies are included where applicable.

FIRST SEMESTER

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper usage.

I. Safety and First Aid (2 weeks)

A. Safe work habits
B. Accident prevention
C. Potential hazard identification
D. Handling emergencies
E. OSHA
F. Maintaining a clean shop

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Key Activities
A. 13 Safety Test

Standard 6: Safety
Students will understand the value and necessity of practicing occupational safety in the construction industry. They will demonstrate content proficiency by:
- passing required safety tests
- demonstrating the safe use of hand tools and power tools
- explaining the roles and responsibilities of the various governmental safety agencies
- using safe work practices
- receiving exposure/training in CPR and basic first aid

Reading
- 2.0 Students read and understand grade-level-appropriate material. They analyze the organizational patterns, arguments, and position advances.
- 2.3 Generate research Questions
- 2.4 Synthesize content; paraphrase and connect ideas

Writing
- 2.3 Write expository compositions, including analytical essays and research reports:
  b. Convey information and ideas from primary and secondary sources accurately and coherently.
  c. Make distinctions between the relative value and significance of specific data, facts, and ideas.
- 2.5 Write business letters
  a. Provide clear and purposeful information and address the intended audience appropriately.
  b. Highlight central ideas or images

Geometry
- 16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line
- 22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper usage.

II. Tools and Machines (3+ weeks)

A. Identification and Operation
   ii. Saws
   iii. Drills
   iv. Jointer
   v. Planer
   vi. Lathes
   vii. Sanders
   viii. Shapers/routers
B. Hand Tools
C. Safety Practices
D. Proper storage techniques

Key Activities

A. Identification and demonstration of parts, use, and safety practices related to each machine.

Standard 2: Hand Tools
Students will understand safe and appropriate use of hand tools common to the construction industry (hammers, pliers, saws, wrenches, etc.). They will demonstrate content proficiency by:
- identifying tools commonly used in specific trades
- correctly using tools in their intended application
- demonstrating basic care and maintenance of hand tools

Standard 122: Carpentry Safety
Students will understand the importance of safety and safe work practices in carpentry (involving ladders

Standard 123: Carpentry Tools and Machines
Students will understand the names, functions, and safe uses of the tools and machines used in carpentry (hammers, routers, radial arm saws, etc.). They will demonstrate content proficiency by:
- identifying the tools and machines used by the carpenter
- using the tools and machines safely and accurately in carpentry activities

Algebra
- 3.0 Students solve equations and inequalities involving absolute values

Number sense
- 2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division:
- 2.1 Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation
- 2.4 Determine the least common multiple and the greatest common divisor of the whole numbers; use them to solve problems with fractions

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper usage.

III. Applied Mathematics Specialization (3+ weeks)

A. Measurement Calculations

i. Rulers, tapes, and squares
ii. Calipers and micrometers
iii. Board feet, cubic and liquid measures
iv. U.S. and metric measurements units—linear, volume, mass.

Key Activities

A. Daily Worksheet.
B. Quiz every other day.
C. Test every fifth day.

Standard 1: Measurement/Math Applications
Students will understand and apply measurement systems in the planning and layout processes used in the construction industry. They will demonstrate content proficiency by:
- designing solutions to given construction technology problems
- accurately measuring given construction materials for processing
- using measurements to calculate material requirements
- converting scale drawing measurements to full dimensions
- converting measurements from one form to another

Geometry
- 3.0 Students construct and judge the validity of a logical argument and give counterexamples to disprove statement.
- 11. 0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids..
  12.0 Students find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems.
- 17.0 Students prove theorems by using coordinate geometry including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.
- 21.0 Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles

Algebra 1
- 16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

Geometry
- 8.0 Students know, derive, and solve problems involving perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.

SDAIE Instructional Strategies
- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper usage.

III. Materials and Supplies (2 weeks)

A. Identify and use of materials
B. Properties of Materials
C. Hardware and fasteners
D. Abrasives

Key Activities
A. Identify ten major wood species
B. Proper use of hardware and fasteners.

C. Unit Question and Quiz

Standard 4: Construction Business Processes
Students will understand procedures and processes as they occur in the construction industry. They will demonstrate content proficiency by:
- estimating materials using blueprints and specifications
- constructing projects accurately from blueprints and specifications
- planning a sequence of events in a construction project
- solving common construction problems using construction codes and building standards
- keeping accurate records of construction progress.

Writing Applications (Genres and their Applications)
- 2.6 Write technical documents (e.g., a manual on rules of behavior for conflict resolution, procedures for conducting a meeting, minutes for a meeting):
  a. Report information and convey ideas logically and correctly
  b. Offer detailed and accurate specifications

Reading Comprehension (Focus on Informational Materials)
- *2.4 Comprehension and Analysis of Grade-Level-Appropriate Text.*
  Synthesize the content from several sources or works by a single author dealing with the single issue, paraphrase the ideas and connect them to other sources and related topics to demonstrate comprehension

Geometry
- 8.0 Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.
- 11. 0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

SDAIE Instructional Strategies
- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper usage.

IV. Planning and Layout (4 weeks)
1. Print reading
2. Estimating
   i. Bill of materials
3. Planning
   i. Plan of procedure
4. Layout

Key Activities

A. Draw and make a set of prints
B. Students will write a bill of materials using their prints
C. A Plan of Procedure will be developed by the students using the prints and the bill of materials which they produced.
D. Students will layout the sizes on the material they will use.

Standard 124: Carpentry Materials and Supplies
Students will know the names, properties, and appropriate use of materials and supplies used in carpentry (wood, plywood, gypsum board, etc.). They will demonstrate content proficiency by:
- identifying building materials and supplies
- discussing the properties and appropriate uses of building materials and supplies
- demonstrating the ability to safely use building materials and supplies in carpentry activities

Standard 125: Carpentry Activities
Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing, etc.) They will demonstrate content proficiency by:
- identifying procedures, techniques, and processes used in carpentry
- demonstrating the ability to lay out, form, frame, and finish carpentry projects

Writing Applications (Genres and their Applications)
- 2.6 Write technical documents (e.g., a manual on rules of behavior for conflict resolution, procedures for conducting a meeting, minutes for a meeting):
  a. Report information and convey ideas logically and correctly
  b. Offer detailed and accurate specifications

Geometry
- 8.0 Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.
- 11. 0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

SECOND SEMESTER

SDAIE Instructional Strategies
- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment – here the – demonstrate the proper – case

V. *Production (12 weeks)*

1. Assigned Project
    i. Multiple joints used
    ii. Multiple machines used
    iii. Multiple hand tools used
2. Project of choice
    i. Joints multiple joints used
    ii. Multiple machines used
    iii. Multiple hand tools used
3. Joints
4. Gluing and Clamping

Key Activities

A. Assigned Project (1st Semester) Pendulum Clock
B. Project of Choice (2nd Semester) Project must use cabinetry methods.
C. Students will be able to identify 12 different joints.
D. Students will be able to identify different glue types and their uses.

Standard 5: Construction Project Phases/Systems
Students will understand the variety of building phases/systems used in construction projects. They will demonstrate content proficiency by:

- developing a building plan utilizing given systems common to construction projects
- using tools, processes, and materials appropriate to architectural design and development of construction projects
- using tools, processes, and materials appropriate to site development in construction projects
- using tools, processes, and materials appropriate to structural systems in construction projects
- using tools, processes, and materials appropriate to electrical systems in construction projects
- using tools, processes, and materials appropriate to mechanical systems in construction projects
- using tools, processes, and materials appropriate to finish systems in construction projects

Standard 125: Carpentry Activities
Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing, etc.) They will demonstrate content proficiency by:

- identifying procedures, techniques, and processes used in carpentry
- demonstrating the ability to lay out, form, frame, and finish carpentry projects

Geometry

- Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.
- 8.0 Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.
- 12.0 Students find and use measures of sides and interior and exterior angles of triangles and polygons to classify figures and solve problems.
- 16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through the point off the line.
- 17.0 Students prove theorems by using coordinate geometry, including midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.
- 22.0 Students know the effects of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper usage.

VI. *Surface Preparation (4 weeks)*

1. Procedures and techniques of sanding
2. Tools
3. Materials

Key Activities

A. Students will demonstrate proper surfacing preparation on their projects.

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper usage.

3. Materials

Key Activities

A. Students will show proper finishing techniques on their projects.
B. Students will produce a project using an alternate finishing method (i.e. bleaching, waxing, etc.).

Standard 125: Carpentry Activities
Students will know the procedures, techniques, and processes used in carpentry (layout, forming, framing,
etc.) They will demonstrate content proficiency by:
- identifying procedures, techniques, and processes used in carpentry
- demonstrating the ability to lay out, form, frame, and finish carpentry projects

SDAIE Instructional Strategies

- Vocabulary & Language Development: Use Realia, Visuals, Content vocabulary development
- Explicit Instruction: Students are told and shown proper safe usage of machines and tools
- Guided Instruction: Students are demonstrated to and then must do the safety practice demonstrated.
- Metacognition & Authentic Assessment: Students take a written as well as authentic assessment where they demonstrate the proper usage.

VIII. Career Preparation and Development (3 weeks)

A. Career Development

i. Opportunities in wood manufacturing
ii. Occupational and goal setting
iii. Self-appraisal
iv. Work values

B. *Employability*

v. Job search techniques
vi. Occupational
vii. Goal setting
viii. Leadership in the work setting
ix. Teamwork

Key Activities

A. Students will be given three weeks to develop a power point presentation on a career that is related to Wood or Industrial Technology.
B. Students will apply for a mock job and go through an interview with the instructor.

Foundation Standard 3.0: Students understand how to make effective decisions, use career information, and manage personal career plans.

Foundation Standard 3.1: Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.
Foundation Standard 9.2: Understand the ways in which preprofessional associations, such as SkillsUSA, and competitive career development activities enhance academic skills, promote career choices, and contribute to employability

V. STUDENT ASSESSMENT

A variety of authentic assessments will be used such as portfolios, student presentations and projects, and rubric scoring. Quizzes, tests, participation, daily work grades, and mentor evaluations will also be used.

VI. INSTRUCTIONAL TECHNOLOGIES AND MATERIALS / SOFTWARE

The designated textbooks, materials, and technologies meet the state standards for this content area.

Text: General Woodworking, 6th edition by Chris H. Groneman, McGrawHill, 1952, 1982

VII. TEACHING ACTIVITIES AND METHODS TO FACILITATE THE

INSTRUCTION OF INDUSTRIAL AND TECHNOLOGY EDUCATION CONTENT STANDARDS FOR ALL LEARNING STYLES

Student activities suggested below are derived from Gardner's Seven Levels of Intelligence (learning styles).

LINGUISTIC LEARNER
- oral reports
- essays

LOGICAL/MATHEMATICAL LEARNER
- graphic organizers
- timeline
- models

SPATIAL LEARNER
- drawings
- maps and flow charts

BODILY-KINESTHETIC LEARNER
- Building projects

INTERPERSONAL LEARNER
- discussions
- cooperative and collaborative projects
- peer coaching
- conducting interviews
- simulation activities

INTRAPERSONAL LEARNER
- response journals/learning logs
- observations