

COURSE SYLLABUS

DFTG 2302 (3:2:4)

**MACHINE DRAFTING**

Computer Aided Drafting & Design Technology

Industrial Technology Department

Technical Education Division

Levelland Campus

SOUTH PLAINS COLLEGE

Fall 2017

## SCANS COMPETENCIES

### **RESOURCES: Identifies, organizes, plans and allocates resources.**

- C-1 **TIME**--Selects goal--relevant activities, ranks them, allocates time, and prepares and follows schedules.
- C-2 **MONEY**--Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
- C-3 **MATERIALS & FACILITIES**--Acquires, stores, allocates, and uses materials or space efficiently.
- C-4 **HUMAN RESOURCES**--Assesses skills and distributes work accordingly, evaluates performances and provides feedback.

### **INFORMATION--Acquires and Uses Information**

- C-5 Acquires and evaluates information.
- C-6 Organizes and maintains information.
- C-7 Interprets and communicates information.
- C-8 Uses computers to Process information.

### **INTERPERSONAL--Works With Others**

- C-9 Participates as members of a team and contributes to group effort.
- C-10 Teaches others new skills.
- C-11 Serves clients/customers--works to satisfy customer's expectations.
- C-12 Exercises leadership--communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.
- C-13 Negotiates--Works toward agreements involving exchanges of resources resolves divergent interests.
- C-14 Works with Diversity--Works well with men and women from diverse backgrounds.

### **SYSTEMS--Understands Complex Interrelationships**

- C-15 Understands Systems--Knows how social, organizational, and technological systems work and operates effectively with them
- C-16 Monitors and Correct Performance--Distinguishes trends, predicts impacts on system operations, diagnoses systems' performance and corrects malfunctions.
- C-17 Improves or Designs Systems--Suggests modifications to existing systems and develops new or alternative systems to improve performance.

### **TECHNOLOGY--Works with a variety of technologies**

- C-18 Selects Technology--Chooses procedures, tools, or equipment including computers and related technologies.
- C-19 Applies Technology to Task--Understands overall intent and proper procedures for setup and operation of equipment.
- C-20 Maintains and Troubleshoots Equipment--Prevents, identifies, or solves problems with equipment, including computers and other technologies.

## FOUNDATION SKILLS

### **BASIC SKILLS--Reads, writes, performs arithmetic and mathematical operations, listens and speaks**

- F-1 Reading--locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.
- F-2 Writing--Communicates thoughts, ideas, information and messages in writing, and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.
- F-3 Arithmetic--Performs basic computations; uses basic numerical concepts such as whole numbers, etc.
- F-4 Mathematics--Approaches practical problems by choosing appropriately from a variety of mathematical techniques.
- F-5 Listening--Receives, attends to, interprets, and responds to verbal messages and other cues.
- F-6 Speaking--Organizes ideas and communicates orally.

### **THINKING SKILLS--Thinks creatively, makes decisions, solves problems, visualizes, and knows how to learn and reason**

- F-7 Creative Thinking--Generates new ideas.
- F-8 Decision-Making--Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative.
- F-9 Problem Solving--Recognizes problems and devises and implements plan of action.
- F-10 Seeing Things in the Mind's Eye--Organizes and processes symbols, pictures, graphs, objects, and other information.
- F-11 Knowing How to Learn--Uses efficient learning techniques to acquire and apply new knowledge and skills.
- F-12 Reasoning--Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

### **PERSONAL QUALITIES--Displays responsibility, self-esteem, sociability, self-management, integrity and honesty**

- F-13 Responsibility--Exerts a high level of effort and preservers towards goal attainment.
- F-14 Self-Esteem--Believes in own self-worth and maintains a positive view of self.
- F-15 Sociability--Demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings.
- F-16 Self-Management--Assesses self accurately, sets personal goals, monitors progress, and exhibits self-control.
- F-17 Integrity/Honesty--Chooses ethical courses of action.

Levelland Campus

COURSE SYLLABUS

COURSE TITLE: DFTG 2302: MACHINE DRAFTING

INSTRUCTOR: MIKE COLER

OFFICE LOCATION TA206

AND PHONE/E-MAIL: 2351 mcoler@southplainscollege.edu

OFFICE HOURS: T Th 2:50- 5:00 Fri 8:00-12:00 by appointment

SOUTH PLAINS COLLEGE IMPROVES EACH STUDENT'S LIFE

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I. GENERAL COURSE INFORMATION:

A. COURSE DESCRIPTION

MACHINE DRAFTING. (3:2:4) Prerequisite: DFTG 1309 or ENGR 1304. Production of detail and assembly drawing of machines, threads, gears, cams tolerances and limit dimensioning, surface finishes, and precision drawings. Basic computer-aided manufacturing (CAD/CAM), jig and fixture design and quality assurance processes are introduced in this course.

The scope of Machine Drafting will be for sixteen weeks, which will include two hours of lecture per week and four hours of laboratory experience per week, for a total of ninety six contact hours per semester.

B. COURSE LEARNING OUTCOMES

Interpretation of terms used in tolerancing, determine dimensions of two mating parts; draw spur and bevel gears; and draw set of detail and assembly drawings; define terms used in tolerancing; determine interference and clearances; specify types of threads forms; interpret thread notes; draw spur, bevel, cam profile; and draw a set of detail and assembly drawings.

## C. COURSE COMPETENCIES

Upon successful completion of this course (as outlined by: lesson & grade criteria and standards for course grades) the student will have accomplished the following skills and abilities:

1. Demonstrate an understanding and practical proficiency in the theory of shape description.
2. Demonstrate an understanding and practical proficiency in basic dimensioning.
3. Demonstrate an understanding and practical proficiency in geometric dimensioning and tolerancing.
4. Demonstrate an understanding and practical proficiency in drawing working and assembly drawings.
5. Demonstrate an understanding and practical proficiency in fastener design and fastener processes.
6. Demonstrate an elementary understanding of different forming processes used in machine design.
7. Demonstrate a fundamental understanding and practical proficiency in the elementary design of machine devices used to transmit power and motion.
8. Demonstrate a fundamental understanding and practical proficiency in the design process and drawing proto-type detailed and assembly drawings.
9. Demonstrate an elementary understanding of basic types and functions of jigs and fixtures.
10. Demonstrate a fundamental understanding of computer-aided manufacturing (CAD/CAM) used in design and manufacturing machine parts.
11. Demonstrate a fundamental understanding of the quality assurance processes used in the manufacturing of machine devices.
12. Demonstrate an understanding and practical proficiency using software for 3D modeling of machine drawings.

#### D. ACADEMIC INTEGRITY

It is the aim of the Computer Aided Drafting & Design Technology faculty of South Plains College to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his or her own work which he or she has not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, possibly suspension. Students should refer to the SPC General Catalog policy regarding consequences for cheating and plagiarism (see "Academic Integrity" as well as "Student Conduct" sections in the college catalog). At times, working with other students is encouraged for some assignments and meets SCANS competencies C-9 through C-14. If you have a question as to whether you may work with other students on any assignment, ask your instructor.

#### E. SCANS AND FOUNDATION SKILLS

Appropriate competencies and foundation skills set forth by the Secretary's Commission on Achieving Necessary Skills (SCANS) have been integrated into the DFTG 2302, Machine Drafting course. Specifically, they are C4, C5, C7, C9, C10, C11, C12, C13, C14, C17, F1, F7, F8, F9, F10, F12, F13, F14 and F15.

#### F. VERIFICATION OF WORKPLACE COMPETENCIES

DFTG 2302, Machine Drafting, is offered in the last phase of the Computer Aided Drafting & Design Technology student's course work. During this phase, a Capstone Learning Experience is provided for students in their last semester to complete degree or certificate program requirements.

### II. SPECIFIC COURSE/INSTRUCTOR REQUIREMENTS

#### A. TEXTBOOK & OTHER MATERIALS

Book Title: Technical Drawing with Engineering Graph  
Author: Giesecke,  
Publisher: Prentice Hall  
Edition: 15th  
Status: ISBN: 1397801343

## B. ATTENDANCE POLICY

The Technical Graphics Specialist is a professional person working in a business or industrial setting that demands much from its team of employees. For this reason, one who is often tardy or absent from work creates an additional burden for his or her co-workers.

The Computer Aided Drafting & Design Technology program, similar to all the allied engineering professions, requires mature attendance to both lecture sessions and laboratory experiences. Obviously, once missed, a class situation cannot be effectively recreated for students who are not present. Your instructors feel that for a student to succeed, that student must not only be present, but must exercise prudent use of class time. Late or absent members tend to retard the progress of the entire class.

Punctual and regular attendance is required of all students attending South Plains College. Students are responsible for all class work covered during absences from class, even in cases in which they are able to satisfy the instructor that the absence was unavoidable. **ABSOLUTELY NO CLASS TIME WILL BE USED TO UPDATE INFORMATION MISSED DUE TO TARDINESS OR ABSENTEEISM;** the student must arrange an appointment with the instructor at a time that will not conflict with class schedules.

After careful study, your instructors have agreed upon the following standard absentee policy:

There are two possible absences in a day one for lecture time and one for lab. The student will be allowed six (6) absences or twelve (12) tardies. Four tardies equal one absence after seven absences have been tallied the course grade will be dropped one letter grade, nine will drop an additional letter grade. Additional absences after 9 will result in student being dropped from the course. (Tardies will be five or more minutes past class start time as shown in the appropriate schedule of classes. Also leaving class without all active assignments completed before the last 15 (fifteen) minutes will also be counted as a tardy).

**NOTE: Instructors in the Computer Aided Drafting & Design Technology program have the prerogative to amend the standard absentee policy. However, the instructor must notify each student in writing of the attendance policy change.**

Any student wishing to drop this class should go through the proper procedure of initiating the withdrawal by obtaining a *drop form* from the Registrar's Office. This form must be signed by the instructor. This procedure provides the opportunity for counseling with the student by the instructor and determining the reason and justification for withdrawal.

Whenever absences become excessive, an *Excessive Absence Report* will be sent to the Dean of Students and, if in the instructor's opinion, minimum course objectives cannot be met due to absences, the student will be withdrawn from the course with the appropriate letter grade X, W, or F.

## ASSIGNMENT POLICY

1. All required work must be turned in on time in order for the student to benefit from the corrections and to study for future examinations.
2. All assignments (practical drawing assignments and/or practical drawing test, objective assignments and/or objective test) will be due at *specified times and dates*.
3. Any drawing assignments that are *not* turned in at the specified time and date will immediately receive a grade penalty of 5 points and an additional 10 points per day for each day the drawing is not turned in for grading.

## D. GRADING POLICY/PROCEDURE

1. Daily course work (lecture and laboratory experiences) = 50% of the semester grade.
2. Practical drawing assignments will be graded on the following:
  - a. Neatness
  - b. Line Criteria
  - c. Text Criteria
  - d. Dimensioning Criteria
  - e. Choice & Location of Views
  - f. Correctness & Accuracy of Views (shape description)
  - g. Nomenclature
  - h. Printing and Plotting
3. Final Exam = 15% of the semester grade. The final examination will be a comprehensive exam comprised of practical skills and objective material
4. Mid-Term Examination = 15% of the semester grade.
5. Attendance = 20% after four absences have been tallied the course grade in this category will be a 0.

**NOTE:** **Instructors in the Computer Aided Drafting & Design Technology program have the prerogative to amend the standard assignment and grading policy. However, the instructor must notify each student in writing of changes made to assignment and grading criterion.**

## **STANDARDS FOR COURSE GRADES**

### **A - EXCELLENT**

Student can complete ALL tasks within specified clock times and dates with excellent quality and with initiative and adaptability to solving problems with limited assistance and/or supervision.

### **B - GOOD**

Student can complete ALL tasks within specified clock times and dates with good quality and with initiative and adaptability to solving problems with periodic assistance and/or supervision.

### **C - AVERAGE**

Student can complete ALL tasks with satisfactory quality, but requires recurring assistance and/or supervision.

### **D - BELOW AVERAGE**

Student can complete more than 3/4 of all tasks satisfactorily, but frequently requires continual assistance and/or supervision to perform the required skills.

### **F - FAILURE**

Student completes less than 3/4 of all tasks satisfactorily, and requires continual assistance and/or supervision to perform the required skills.

## E. SPECIAL REQUIREMENTS

### BUILDING POLICIES

1. **ABSOLUTELY NO** food, drinks or the use of tobacco products will be allowed in the classroom.
2. Radios are not allowed in the classroom.
3. Cellular phones and beepers must be turned off during class time.
4. Each student must clean their workstation at the end of class.
5. **ABSOLUTELY NO** rough or boisterous play or profanity will be allowed in the classroom.
6. Students should adhere to standards established in the SPC Catalog (Student Conduct) and Student Guide. Students in the Computer Aided Drafting & Design Technology program must follow all safe practices in the classroom and other laboratory work areas. Further, chemical hazards and appropriate MSDS safety practices will be covered by the instructor during the first class session if potential for exposure exists.
7. The nature of Computer-Aided Technical Graphics is to stay within established perimeters. In staying with these standards, the computers within the CAD Lab have been optimally set to enhance learning for students. The configurations are set to establish a base of reference for all students, and so the instructor can optimize aid to each student. **THERE WILL BE NO CHANGE TO ANY SYSTEM CONFIGURATIONS OF ANY KIND WITHIN THE CAD LAB.** Examples of this are changing of screensavers, desktop image, backgrounds in AutoCAD, and etc. Infractions of this policy will result in the following:
  - 1<sup>st</sup> offense will result in verbal warning and 1 letter grade deduction of current assignment.
  - 2<sup>nd</sup> offense will result in 1 letter grade deduction to semester grade.
  - 3<sup>rd</sup> offense will result in removal from the class.

### III. COURSE OUTLINE

#### A. TOPICS

1. ORIENTATION
2. SHAPE DESCRIPTION
  - \*MULTIVIEW DRAWING
  - \*SECTIONAL VIEWS
  - \*AUXILIARY VIEWS
  - \*REVOLUTIONS
  - \*PICTORIAL DRAWING
3. DIMENSIONING AND TOLERANCING PRACTICES
4. DETAIL AND ASSEMBLY DRAWINGS
5. FASTENERS AND FASTENER PROCESSES
6. POWER TRANSMISSION DEVICES
  - \*GEARS
  - \*COMB
  - \*BELTS
  - \*CHAINS
7. DESIGN AND CONCEPTS AND DESIGN PROCESSES
8. TOOLING DESIGN (JIGS & FIXTURES)
9. QUALITY ASSURANCE IN MACHINE DESIGN
10. LINKING ENGINEERING GRAPHICS SOFTWARE USED IN 3-D  
MODELING OF MACHINE DEVICES
11. MACHINE DESIGN PROJECT

#### IV. ACCOMMODATIONS

##### **Diversity Statement**

In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

##### **Disabilities Statement**

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) & Lubbock Center 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

##### **Non-Discrimination Statement**

South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

**Campus Concealed Carry** - Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to the SPC policy at:  
([http://www.southplainscollege.edu/human\\_resources/policy\\_procedure/hhc.php](http://www.southplainscollege.edu/human_resources/policy_procedure/hhc.php))

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.