

COURSE SYLLABUS

ENGR 1304 (3:2:4)

ENGINEERING GRAPHICS

Computer-Aided Drafting and Design
And Pre-Engineering

Industrial Technology Department and
Mathematics and Engineering Department

Technical Education Division and
Arts and Sciences Division

Lubbock Campus

SOUTH PLAINS COLLEGE

Fall 2019

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: ENGR 1304: ENGINEERING GRAPHICS

INSTRUCTOR: Frank Anderson

OFFICE LOCATION No Office on site.

AND PHONE/E-MAIL: fanderson@southplainscollege.edu or fanderson@lubbockisd.org

OFFICE HOURS: NA

SOUTH PLAINS COLLEGE IMPROVES EACH STUDENT'S LIFE

I. GENERAL COURSE INFORMATION:

A. COURSE DESCRIPTION

This course includes an introduction to spatial relationships, multiview projection and sectioning, dimensioning, graphical presentation of data, and fundamentals of computer graphics.

This course provides an introduction to basic computer-aided technical drawing. Emphasis is placed on drawing setup, creating and modifying geometry, storing and retrieving predefined shapes, placing, rotating and scaling objects, adding text and dimensions and using layers and coordinate systems. A study of input and output devices and plotting and printing to scale is included in the course.

B. COURSE LEARNING OUTCOMES

Demonstrate knowledge, skills and practical proficiency in the use of CADD systems software and hardware to create, plot and print engineering designs and working drawings. The knowledge and skills obtained in ENGR 1304 Engineering Graphics will be an essential part of the education required to continue the study of universal Computer-Aided Drafting and Design. Successful students will possess the knowledge and skills to be competent and effective in the subsequent course work that is required for the training of the Engineer or Computer-Aided Drafting and Design Specialist.

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 of the fundamental concepts and principles of Engineering Graphics as a language.
 - * Applied Geometry
 - * Theory of Shape Description
 - * Spatial Relationships
 - * Sectioning
 - * Pictorial Drawing
 - * 3D-Modeling
 - * Graphical Presentation of Data
2. Demonstrate an understanding of the fundamental concepts and principles of the CADD system.

Demonstrate an understanding and practical proficiency in:

3. The use of the Windows operating system.
4. The CADD drawing screen features.
5. Drawing startup and setup.
6. Fundamental Engineering Drawing Standards.
7. Draw Command features.
8. Modify Command features.
9. The use of the Status Bar features.
10. The use of the Standard Tool bar features.
11. The use of Object Properties features.
12. The use of Text Command features.
13. The use of Menu Bar features.
14. The use Layers and Layer Properties.
15. Dimensioning.
16. Pictorial Drawing.
17. 3D Modeling basics.
18. File command features.
19. Plotting and Printing.

D. ACADEMIC INTEGRITY

It is the aim of the Computer-Aided Drafting and Design 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 ENGR 1304, Engineering Graphics course. Specifically, they are C1, C7, C8, C17, F2, F4, F12, F13, and F14.

F. VERIFICATION OF WORKPLACE COMPETENCIES

ENGR 1304, Engineering Graphics, is an entry level Computer-Aided Drafting and Design course. However, a Capstone Learning Experience is provided for Computer-Aided Drafting and Design students in the last phase of the student's degree or certificate program.

II. SPECIFIC COURSE/INSTRUCTOR REQUIREMENTS

A. TEXTBOOKS & OTHER MATERIALS

None needed for the Lubbock Campus.

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 and Design 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 CLASSWORK 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.

The following is the standard absentee policy for ENGR 1304:

The student will be allowed three absences and two tardies during the semester. Four absences will drop the course grade one letter. Six absences will cause the student to be dropped from the course. Three tardies will equal one absence. (Tardies will be five or more minutes past class start time as shown in the appropriate schedule of classes).

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.

C. 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.

D. GRADING POLICY/PROCEDURE

1. Assignments = 85% of semester grade. Each practical drawing assignment grade and /or practical drawing test, and any objective assignment and /or objective grade will be calculated with 100 points as the highest possible 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. Tests = 15% of semester grade. No Mid-Term Exam is given in this course. Three tests during the semester averaged together will equal 15% of the semester grade.
4. Each assignment will be graded based on 100 points, and returned to the student.

NOTE: Instructors in the Computer-Aided Drafting and Design 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 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, or the use of tobacco products will be allowed in the classroom.
2. Music devices with earphones/plug are allowed during lab time as long as sound cannot be heard by other students. The student must be able to hear comments made during lab time by the instructor.
3. Cellular phones and beepers must be turned off and placed in your pocket or backpack. Do not use class/lab time to communicate over cell phones with others.
4. Each student must straighten 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 and 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.

III. COURSE OUTLINE

A. TOPICS

1. ORIENTATION
2. INTRODUCTION TO COMPUTER-AIDED TECHNICAL DRAWING & DESIGN SYSTEMS
3. BASIC DRAWING SETUP
4. BASIC DRAW COMMAND PROPERTIES
5. BASIC MODIFY COMMAND PROPERTIES
6. STATUS BAR PROPERTIES
7. STANDARD TOOLBAR FEATURES
8. OBJECT DISPLAY FEATURES
9. TEXT COMMAND PROPERTIES

10. MENU BAR PROPERTIES
11. LAYERS AND LAYER PROPERTIES
12. DIMENSIONING
13. ENGINEERING DRAWING AND DESIGN FUNDAMENTAL PRACTICES AND PRINCIPLES
 - a. ALPHABET OF LINES
 - b. GEOMETRIC CONSTRUCTION
 - c. MULTIVIEW DRAWING
 - d. SECTIONAL VIEWS
 - e. AUXILIARY VIEWS
 - f. PRODUCTION DRAWINGS (WORKING DRAWINGS)
14. PICTORIAL DRAWING
15. BASIC 3-D MODELING
16. PLOTTING AND PRINTING

IV. ACCOMMODATIONS

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.

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.

ADA 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 through the Guidance and Counseling Centers at Reese Center (Building 8) [716-4606](tel:716-4606), or Levelland (Student Services Building) [716-2577](tel:716-2577).

Campus Concealed Carry syllabus statement:

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)

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.