I. INTRODUCTION

Machine drawing is a sequential step from a course in basic drafting and includes the following units of study: Components of machine drawing and the shop process, size description and the use of tolerances, fastening devices and springs, and primary machine elements.

The activities and learning experiences provided by this course of study are directly related to job assignments of drafters mechanical drafting fields.

II. OVERALL OR GENERAL OBJECTIVES OF THE COURSE

Upon successful completion of this course, Machine Drawing, the student will be able to:

1. Discuss the design team concept as used in the various industries to resolve design problems.
2. Identify the components of a machine drawing.
3. Explain the machine shop process.
4. Properly dimension a drawing to include determining applicable tolerances based on the type of fit.
5. Discuss the various types of fastening devices, and prepare display drawings as well as working drawings for production purposes.
6. Perform the necessary calculations involving cutting data and layout of machine elements, and prepare respective display and working drawings.

III. INSTRUCTIONAL MATERIALS

A. Text:
The instructional materials identified for this course are viewable through www.ctcd.edu/books
B. References:

C. Equipment and Materials:
Students should have a flash drive recommend at least a 512MB.

IV. COURSE REQUIREMENTS
Students are encouraged to work quickly and efficiently. Their grades will depend upon their speed and skill as well as their knowledge of drafting techniques. Students should remember that requirements for a passing grade includes keeping up-to-date on all assignments. (See section VI for assignment grading)

All outside reading assignments must be read before discussion dates. Textbooks and equipment should be brought to each class meeting.

V. EXAMINATIONS
1. Examinations will generally consist of a combination of objective questions and drawing problems. The drawing portions shall be graded for accuracy, neatness, and speed.

2. Unannounced short quizzes may be given at the discretion of the instructor. There are no make-up for unannounced quizzes. Students with an excused absence shall review the grading computation with the instructor.

3. Make-up examinations shall be given only to those students having an excused college absence. Excusable absences are those resulting from personal illness, emergencies arising within the family, official school sponsored trips, and military duties or orders requiring brief absences. The student must notify the instructor prior to the absence.
4. At the option of the instructor, any missed exams shall be made-up at a time convenient to the instructor; or the following exam shall count additionally for the missed exam.

5. At no time shall a student use a cell phone or other personal communication or music device during a test, quiz, or any other evaluation type process. Any of these devices should be turned off during the time of the test or quiz and should not be accessed until the student has completed the evaluation and has left the classroom. Violation of this policy shall result in the student receiving a failing grade for the course.

VI. SEMESTER GRADE COMPUTATION

Ninety-five percent of the semester grade will be derived from the average score of the unit quizzes combined equally with the averaged score of the drawing assignments. The remaining 5% of the semester grade shall be based on attendance/participation.

Attendance = 5 points minus 1 point for each unexcused absence

Quiz Average = \[
\frac{\text{Total Score of Quizzes}}{\text{Numbers of Quizzes}}
\]

Drawing Average = \[
\frac{\text{Total Score of Assignments}}{\text{Number of Assignments}}
\]

Semester Average = \[
\frac{(\text{Quiz Average} + \text{Drawing Average}) \times 0.95 + \text{Attendance}}{2}
\]

Students are advised to keep an accurate record of their respective assignments and quiz scores. With this record and by using the formulas provided, grade averages can be calculated at any time during the semester.

The drawing problems assigned will be graded on five major points: Speed, View placement, Accuracy, Line Type, and Text. In most cases, a number grade will be assigned to the drawing based on the numbers one to ten (one being the lowest and ten the highest).

Unless otherwise instructed, all assignments shall be the individual work of the student. Although collaboration and assistance by other students is encouraged, the creation and production of the work must be that of the
individual student. The electronic (or otherwise) sharing of assignments is to be considered collusion and shall result in disciplinary action.

All assignments are due per the course outline. Assignments are due at the beginning of class. Late assignments may be accepted at the instructor’s option. Late assignments will be penalized 1 point for every 24 hours the assignment is late.

VII. NOTES AND ADDITIONAL INSTRUCTIONS FROM COURSE INSTRUCTOR

ATTENDANCE POLICY

Tardiness

Students are required to be in classrooms on time. Instructors may choose to lower a student's grade because of tardiness. Each three unexcused tardies will result in one absence. Excessive tardiness, since it is disruptive to the educational process, may result in disciplinary action. Due process and the right to appeal will be provided to students subjected to disciplinary action. Details can be found in the Student Handbook, which is available at the Office of Student Services.

Class Attendance

Because absences for any reason negatively affect the learning process, the individual student, and the class, students are expected to attend all classes in which they are enrolled.

Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is expected, and the College reserves the right to deal at any time with individual cases of nonattendance.

A. The effect of absences on grades is determined by the instructor.

B. Excessive absences constitute cause for dropping a student from class; in such a case, the grade of FN may be given.

C. In extreme cases, the academic dean may suspend the student from the College.

D. When absence from class is necessary for any reason, the student has the responsibility to arrange to make up assignments missed during the absence.
E. The decision to allow a student to make up work following any absence rests solely with the instructor.

F. The student who desires to be absent from classes for the observance of a religious holy day should submit a request to each instructor by the 15th calendar day after the first day of the semester. Although the student will be excused from classes, he/she will be responsible for make-up of all work or tests missed. A "religious holy day" means a holy day observed by a religion whose place of worship is exempt from property taxation under Section 11.20, Tax Code.

Excessive Absences

Absences from classes for any reason must not exceed College standards. Because objectives can vary from department to department and from course to course, the instructor shall inform the student of specific course objectives at the initial class meeting. A student who is not meeting course objectives may be withdrawn from the course at the discretion of the instructor.

Students who have not attended class by the 12th class day will be dropped by the instructor with a grade of "W".

Students may be administratively withdrawn from any class when their absences exceed a total of five (5) class meetings for long semester, three (3) class meetings for eight-week semester, two (2) class meetings for six-week semester, and in the opinion of the instructor they cannot satisfactorily complete the course. The final decision rests solely with the instructor.

The following specific rules apply to absences:

a. Instructors are required to keep attendance records.

b. Each faculty member will inform students of the attendance policy of the course at the initial class meeting.

c. Students are responsible for understanding the attendance policy for each course in which they enrolled and for meeting the attendance requirements.

d. Failure to meet the attendance requirements in a course may lower a grade for the semester or may result in failure in the course.

e. An administrative withdrawal may be initiated when the student fails to meet College attendance requirements. The instructor will assign the appropriate grade on the Administrative Withdrawal Form for submission to the registrar.
f. Only instructors can authorize an absence. Regardless of the reason for the absence, students are responsible for completing all course work covered during any absence.

Official Withdrawal Policy

It is the student's responsibility to officially drop a class if circumstances prevent attendance. Any student who desires to, or must, officially withdraw from a course after the first scheduled class meeting must file an Application for Withdrawal or an Application for Refund at the Records Office, or with a Central Texas College representative at the Military Education Center.

1. The withdrawal form must be signed by the student.

2. Application for Withdrawal will be accepted at any time prior to the 12th week of classes. Students attending the Fort Hood eight-week classes may withdraw at any time before the Wednesday prior to the first day of finals. Also, see Grade Notes: "W". The date is published each semester in the Schedule Bulletin.

3. Students using Financial Aid, Military Tuition Assistance, VA benefits or other than personal funds may be required to repay tuition and fees to the funding agency. For specific repayment requirements, students are referred to the Student Financial Aid Office, or the Veterans Services Office. Military Tuition Assistance students are referred to the Military Education Center. Students must withdraw in person after receiving FA, MTA, or VA approval.

4. Student may not withdraw from a class for which the instructor has previously issued the student a grade of "F" or "FN" for nonattendance.

Disability Support Services

Disability Support Services provides services to students who have appropriate documentation of a disability. Students requiring accommodations for class are responsible for contacting the Office of Disability Support Services (DSS) located on the central campus. This service is available to all students, regardless of location. Review the website at www.ctcd.edu/disability-support for further information. Reasonable accommodations will be given in accordance with the federal and state laws through the DSS office.
VIII. COURSE OUTLINE

A course outline and assignment sheet will be provided to each student as a supplement to this syllabus, prepared so as to reflect the most current date drafting assignments for the respective semester. Outline divides the course into five units of studies, with information grouped according to the title of the respective unit. Information from each of the 5 units may be spread in any order over the course material.

Student activities through each unit will be essentially the same. Reading assignments are to be prepared prior to the scheduled class in order to better facilitate discussions and greater enhance understanding.

A. **Unit One**: Shop Processes and Components of Machine Drawing

   **Unit Objectives**: Upon successful completion of this unit, the student will be able to:

   - a) Reflect manufacturing methods in preparation of drawings
   - b) Dimension drawings commensurate with the capability of shops to make measurements
   - c) Select shop processes compatible with functional needs of a design and production
   - d) Apply the "do's and don'ts principles" of practical design

B. **Unit Two**: Components of Machine Drawing

   **Unit Objectives**: Upon successful completion of this unit, the student will be able to:

   - a) Layout a drawing sheet to properly depict margin and title block
   - b) Prepare lists of materials
   - c) List both general and local notes on working drawings
   - d) Explain the drawing change system as applicable to machine drawings

C. **Unit Three**: Size Descriptions

   **Unit Objectives**: Upon successful completion of this unit, the student will be able to:
a) Apply basic dimensioning techniques in preparation of machine drawings
b) Dimension a drawing using the geometric shape technique
c) Use symbols to convey the requirements for surface finishes on materials used in the production of the design
d) Use of the types of fits between mating parts, and apply them in the preparation of drawings
e) Use tolerance zones in preparing drawings

D. Unit Four: Threads, Fasteners, and Springs

Unit Objectives: Upon successful completion of this unit, the student will be able to:

a) Identify the commonly used fastening devices according to their definitions and related terms
b) Prepare drawings according to the types and characteristics of such devices
c) Use standard conventions and symbols in the preparation of these devices

E. Unit Five: Machine Elements

Unit Objectives: Upon successful completion of this unit, the student will be able to:

a) Make necessary calculations in determining the dimensions of mating components
b) Prepare display and working drawing of gears
c) Identify the actions within the design of a cam and prepare the respective displacement diagrams