



Drafting and Design Engineering Technology Department

DFTG 2306: Machine Design | CRN | #19929

Spring 2020 | 16 Weeks (01.21.2020-05.17.2020)

Hybrid | Stafford Room W105 | Wed 6:00 PM – 8:50 PM

6 Credit Hours | 96 hours per semester

Instructor Contact Information

| | | | |
|-------------|--|------------------|--------------------------|
| Instructor: | Sergii Pyrog | Office Phone: | 786-355-2568 |
| Office: | South College | Office Hours: | Thursdays 2:00-6:00 p.m. |
| HCC Email: | Sergii.Pyrog@hccs.edu | Office Location: | South College |

Please feel free to contact me concerning any problems that you are experiencing in this course. Your performance in my class is very important to me. I am available to hear your concerns and just to discuss course topics.

Instructor's Preferred Method of Contact

I will respond to emails within 24 hours Monday through Friday; I will reply to weekend messages on Monday morning.

What's Exciting About This Course

Upon completion of the course, the student will learn:

Theory and practice of design, projects in problem solving, including press fit, bolted and welded joints, and transmission components.

In this class, you can use any CAD software you want. You get to use computer to do more challenging drawings and models.

My Personal Welcome

Please feel free to contact me concerning any problems that you are experiencing in this course. You do not need to wait until you have received a poor grade before asking for my assistance. Your performance in my class is very important to me. I am available to hear your concerns and just to discuss course topics. See me either before or after class as I may not have an office at this campus.

Prerequisites and/or Co-Requisites

Must have completed DFTG 2302 – Machine Drafting with a grade D (or higher). If you have enrolled in this course having satisfied these prerequisites, you have a higher chance of

success than students who have not done so. Please carefully read and consider the repeater policy in the [HCCS Student Handbook](#).

Eagle Online Canvas Learning Management System

This section of DFTG-2306 will use [Eagle Online Canvas](https://eagleonline.hccs.edu) (<https://eagleonline.hccs.edu>) to supplement in-class assignments, exams, and activities. **HCC has officially defined hybrid to be a course that is taught half the time (3.0 hours or 50% of time) in a traditional face-to-face classroom environment and the remaining 3.0 hours or 50% of time online.** HCCS Open Lab locations may be used to access the Internet and Eagle Online Canvas. It is recommended that you **USE FIREFOX OR CHROME AS YOUR BROWSER.** (*Schedule for coming open lab will be announce once it is available*)

HCC Online Information and Policies

Here is the link to information about HCC Online classes including the required Online Orientation for all fully online classes: <http://www.hccs.edu/online/>

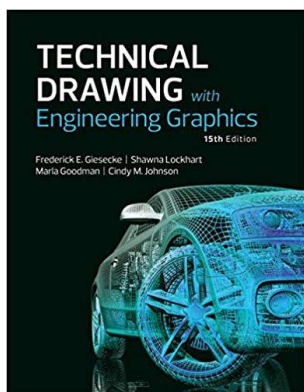
Scoring Rubrics, Sample Assignments, etc.

Look in Eagle Online Canvas for the scoring rubrics for assignments, samples of class assignments, and other information to assist you in the course.

<https://eagleonline.hccs.edu/login/ldap>

Instructional Materials

Textbook Information



The textbook listed below is **required** for this course.
"Technical Drawing with Engineering Graphics" (15th edition)
 by Frederick E. Giesecke (Pearsons).
ISBN-10: 9780134306414
ISBN-13: 978-0134306414

It is included in a package that contains the text as well as an access code and are found at the [HCC Bookstore](#). You may either use a hard copy of the book, or rent the e-book from Pearson. Order your book here: [HCC Bookstore](#)

Temporary Free Access to E-Book

None.

Other Instructional Resources

Publisher's Digital Workbook

None.

Tutoring

HCC provides free, confidential, and convenient academic support, including writing critiques, to HCC students in an online environment and on campus. Tutoring is provided by HCC personnel in order to ensure that it is contextual and appropriate. Visit the [HCC Tutoring Services](#) website for services provided.

Libraries

The HCC Library System consists of 9 libraries and 6 Electronic Resource Centers (ERCs) that are inviting places to study and collaborate on projects. Librarians are available both at the libraries and online to show you how to locate and use the resources you need. The libraries maintain a large selection of electronic resources as well as collections of books, magazines, newspapers, and audiovisual materials. The portal to all libraries' resources and services is the HCCS library web page at <http://library.hccs.edu>.

Supplementary Instruction

Supplemental Instruction is an academic enrichment and support program that uses peer-assisted study sessions to improve student retention and success in historically difficult courses. Peer Support is provided by students who have already succeeded in completion of the specified course, and who earned a grade of A or B. Find details at <http://www.hccs.edu/resources-for/current-students/supplemental-instruction/>.

Course Overview

- Advance techniques in the creation of 3D drawings
- Create and use of Templates
- Create drawing annotation and dimensioning.
- Apply Geometric dimension and tolerance.
- Investigate parent child relationship.
- Run finite analyses to resolve failure in the design.
- Explore sustainability in design and construction of a model.
- Use the additive or subtractive manufacturing process.

Core Curriculum Objectives (CCOs)

The Department of Labor has identified skill sets that U.S. employers want most in entry level employee. It is our commitment to prepare every student with the knowledge and skills needed to succeed in today's dynamic environment. The HCCS Drafting & Design Engineering Technology Department has specified that the course address the following core objectives:

- *Interpret/communicate data: Selects and analyzes information and communicates the results to others using oral, written, graphical, pictorial, or multi-media methods.*
- *Monitors and corrects performance: Distinguishes trends, predicts impact of actions on system operations, diagnoses deviations in the function of a system, organization, and takes necessary action to correct performance.*
- *Design/improve systems: Prevents, identifies, or solves problems in machines, computers, and other technologies.*
- *Creative thinking: Uses imagination freely, combines ideas or information in new ways, makes connections between seemingly unrelated ideas, and reshapes goals in ways that reveal new possibilities.*
- *Students will be presented with a civil engineering problem for which they will be required to design solution.*

- *Based on known trends and their creativity, each student will be responsible designing a solution and diagnose deviations and solve problems in the function of the design and take actions necessary to improve on and correct performance.*
- *Evaluation of these skills will be based on the creativity, functionality and efficiency of the civil design.*

Learning Outcomes

- Machine design process
- Manufacturing process
- Mechanical components and mechanism

Learning Objectives

Upon completion of the course, the student should be able to:

1. Design simple mechanical components from given engineering data.
2. Calculate applied loads to components for design selection from vendor catalogs.
3. Completely document mechanical project.

Student Success

Expect to spend at least twice as many hours per week outside of class as you do in class studying the course content. Additional time will be required for written assignments. The assignments provided will help you use your study hours wisely. Successful completion of this course requires a combination of the following:

- Reading the textbook
- Attending class in person and/or online
- Completing assignments
- Participating in class activities

There is no short cut for success in this course; it requires reading (and probably re-reading) and studying the material using the course objectives as your guide.

Instructor and Student Responsibilities

As your Instructor, it is my responsibility to:

- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through learner-centered instructional techniques
- Provide a description of any special projects or assignments
- Inform students of policies such as attendance, withdrawal, tardiness, and make up
- Provide the course outline and class calendar which will include a description of any special projects or assignments
- Arrange to meet with individual students before and after class as required

As a student, it is your responsibility to:

- Attend class in person and/or online
- Participate actively by reviewing course material, interacting with classmates, and responding promptly in your communication with me

- Read and comprehend the textbook
- Complete the required assignments and exams
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts, and all assignments
- Attain a raw score of at least 50% on the departmental final exam
- Be aware of and comply with academic honesty policies in the [HCCS Student Handbook](#)

Assignments, Exams, and Activities

Assignment

There are in-class assignments, Midterm and Final Project required for this class

Exams

There two Exams: 1) Mid-Term, and 2) Final Exam are required in this class. The exams are multiple-choice question.

In-Class Activities

Students are required to complete all exercises in class

Final Exam

All students will be required to take a comprehensive departmental final exam consisting of multiple-choice questions. All the information students need to prepare for the exam is in the [Final Exam Handbook](#).

Students who are absent from the final exam without discussing their absence with the instructor in advance or within 24 hours afterward will receive a course grade of Incomplete. Any student who does not take a makeup exam by the end of the following long semester will receive a final exam grade of zero and a course grade of F.

Grading Formula

The Drafting and Design Engineering Technology department adopt a points-based grading system with a maximum 100 points.

| | |
|------------------------------|------------|
| Attendance (Lecture session) | 10% |
| Class Assignments | 40% |
| Midterm | 15% |
| Final Exam | 15% |
| Final Project | <u>20%</u> |
| Total: | 100% |

| Grade | Total Points |
|-------|--------------|
| A | 90+ |
| B | 80-89 |
| C | 70-79 |
| D | 60-69 |
| F | <60 |

HCC Grading Scale can be found on this site under Academic Information:
<http://www.hccs.edu/resources-for/current-students/student-handbook/>

Weekly Course Calendar

| Week | Dates | Topic/What's due |
|------|------------|--|
| 1 | 01/22/2020 | Syllabus Design Overview and Objective |
| 2 | 01/29/2020 | Material selection: Must satisfy the requirement from the design criteria that will includes surface protection, wear and tear aspects, etc. |
| 3 | 02/05/2020 | Lug strength and calculation. Calculation of axial and tension strength of material. |
| 4 | 02/12/2020 | Calculate moment of inertia and section modulus. |
| 5 | 02/19/2020 | Calculate bending strength of material |
| 6 | 02/26/2020 | Weld strength calculation: At the end of this unit the students understand the process and procedure of calculating the weld strength of the material. |
| 7 | 03/04/2020 | Calculation of bolt strength, preload, and torque Review for MidTerm Exam |
| 8 | 03/11/2020 | Mid-Term Exam |
| 9 | 03/25/2020 | Presentation of conceptual design |
| 10 | 04/01/2020 | Clearance table, standard drill size and miscellaneous information. |
| 11 | 04/08/2020 | Geometric Tolerance |
| 12 | 04/15/2020 | Vendor Data Research |
| 13 | 04/22/2020 | Pattern Layout |
| 14 | 04/29/2020 | Final Project Presentations |
| 15 | 05/06/2020 | Review for Final Exam / All outstanding work must be submitted this week |
| 16 | 05/13/2020 | Final Exam |

Syllabus Modifications

The instructor reserves the right to modify the syllabus at any time during the semester and will promptly notify students in writing, typically by e-mail, of any such changes.

Instructor's Practices and Procedures

Missed Assignments

The student must request a make-up test and it should be scheduled at the earliest possible date following the quiz (or mid-term) missed. Please note that a make-up exam is not a retake. That is, make-up exams are allowed only for missed exams. NO make-up test is given for the final examination.

Academic Integrity

Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. College System Officials may initiate penalties and/or disciplinary proceedings against a student accused of scholastic dishonesty.

- "Scholastic dishonesty" includes, but is not limited to, cheating on a test, plagiarism, and collusion.
- "Cheating" on a test includes:
 - Copying from another student's test paper;
 - Using materials during a test that are not authorized by the person giving the test;
 - Collaborating with another student during a test without authority;
 - Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of an un-administered test;
 - Bribing another person to obtain a test that is administered.
- "Plagiarism" means the misuse of another's work and the deliberate incorporation of that work into work you offer for credit.
- "Collusion" means the unauthorized collaboration with another person in preparing work offered for credit.

Determination of scholastic dishonesty will be at the discretion of the instructor. Here's the link to the HCC information about academic integrity (Scholastic Dishonesty and Violation of Academic Scholastic Dishonesty and Grievance):

<http://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-procedures/>

Attendance Procedures

You are expected to attend all lecture classes and labs. You are also responsible for all materials covered in either lecture or lab. In the case of your absence, you must contact the instructor to obtain make-up assignments or arrange make-up testing, either of which can be distributed at the instructor's discretion.

Class attendance is checked daily. You may be dropped from the class and get an F grade if you are absent more than 12.5% of the instruction hours (lecture and lab). For example: A 12.5% of 96-hour course, meeting twice per week for 3 hours per class meeting equals 12 hours. If you are absent more than 4 class meetings, you may drop.

Student Conduct

Students are responsible for knowing and obeying the HCC rules such as maintaining high standards of academic integrity, respecting the rights of others. A student who violates these rules, whether on or off campus or on-line, will be subject to adjudication and potential disciplinary action in accordance with the Student Handbook. Please carefully read and consider the repeater policy in the Student Handbook <https://www.hccs.edu/resources-for/current-students/student-handbook/>

Instructor's Course-Specific Information (As Needed)

My teaching philosophy is emphasized on "Analytical". I focus on the relationship of Descriptive Geometry as an "analytical" graphic visualization process. This helps student to gain a conceptual understanding of how to analyze and represent 3-D objects in 2-D space for the purpose of designing, making and extracting.

Electronic Devices

Out of consideration for others, please turn your cell phone to the silent mode. No texting is allowed while class is in session. No Internet surfing during lectures and labs. Absolutely no Internet site with obscene or nude pictures.

HCC Policies

Here's the link to the HCC Student Handbook <http://www.hccs.edu/resources-for/current-students/student-handbook/>. In it you will find information about the following:

| | |
|---|-------------------------------------|
| Academic Information | Incomplete Grades |
| Academic Support | International Student Services |
| Attendance, Repeating Courses, and Withdrawal | Health Awareness |
| Career Planning and Job Search | Libraries/Bookstore |
| Childcare | Police Services & Campus Safety |
| disAbility Support Services | Student Life at HCC |
| Electronic Devices | Student Rights and Responsibilities |
| Equal Educational Opportunity | Student Services |
| Financial Aid TV (FATV) | Testing |
| General Student Complaints | Transfer Planning |
| Grade of FX | Veteran Services |

EGLS³

The EGLS³ ([Evaluation for Greater Learning Student Survey System](#)) will be available for most courses near the end of the term until finals start. This brief survey will give invaluable information to your faculty about their teaching. Results are anonymous and will be available to faculty and division chairs after the end of the term. EGLS³ surveys are only available for the Fall and Spring semesters. -EGLS3 surveys are not offered during the Summer semester due to logistical constraints.

<http://www.hccs.edu/resources-for/current-students/egls3-evaluate-your-professors/>

Campus Carry Link

Here's the link to the HCC information about Campus Carry:

<http://www.hccs.edu/departments/police/campus-carry/>

HCC Email Policy

When communicating via email, HCC requires students to communicate only through the HCC email system to protect your privacy. If you have not activated your HCC student email account, you can go [to HCC Eagle ID](#) and activate it now. You may also use Canvas Inbox to communicate.

Housing and Food Assistance for Students

Any student who faces challenges securing their foods or housing and believes this may affect their performance in the course is urged to contact the Dean of Students at their college for support. Furthermore, please notify the professor if you are comfortable in doing so.

This will enable HCC to provide any resources that HCC may possess.

Office of Institutional Equity

Use the link below to access the HCC Office of Institutional Equity, Inclusion, and Engagement (<http://www.hccs.edu/departments/institutional-equity/>)

disAbility Services

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to <http://www.hccs.edu/support-services/disability-services/>

Title IX

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual's fundamental rights and personal dignity. Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status in educational programs and activities. If you require an accommodation due to pregnancy please contact an Abilities Services Counselor. The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:

David Cross
Director EEO/Compliance
Office of Institutional Equity & Diversity
3100 Main
(713) 718-8271
Houston, TX 77266-7517 or Institutional.Equity@hccs.edu
<http://www.hccs.edu/departments/institutional-equity/title-ix-know-your-rights/>

Office of the Dean of Students

Contact the office of the Dean of Students to seek assistance in determining the correct complaint procedure to follow or to identify the appropriate academic dean or supervisor for informal resolution of complaints.

<https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-complaints/speak-with-the-dean-of-students/>

Department Chair Contact Information

Henry Hoang – Department Chair
henry.hoang@hccs.edu
Phone: 713-718-5724