

Approval Chart for Curriculum Changes

A = Approve I = Information Item¹ R = Advise & Respond²

Course Number ENGR 338 or Degree Plan(s) _____

State the requested change and reason. A memo may be attached if more space is necessary.

See Attached

Circle the number that corresponds to the requested change. Degree plan changes are on the second page.

		Dept./School	College Academic	Deans	COUNCIL ¹				Provost	President
					TEC	UGEC	UUAC	GRAD		
1.	Title (description unchanged)	A	A	A		I			I	I
2.	Description (not affecting content)	A	A	A		I			I	I
3.	Course term(s)	A	I	A		I			I	I
4.	Content (substantive change)	A	A	A		I			A	A
5.	Number of hours (lecture, lab, contact)	A	A	A		A			A	A
6.	Course number within the hundred	A	A	I		I			I	I
7.	Course number beyond the hundred	A	A	A		A			A	A
8.	Prerequisites	A	A	A		I			I	I
9.	Course fee(s)	A	--	A		--			A	I
10.	From U to G or G to U	A	A	A		A			A	A
11.	Cross list with another department: U or G level	A	A	A		A			A	A
12.	Department of record	A	A	A		A			A	A
13.	Open or close a course	A	A	A		A			A	A
14.	New course — See website for application and process. This change includes combining or splitting a course(s).	A	A	A		A			A	A

Note: When an academic unit does not have a council, the UGEC and/or UUAC will serve as its academic council, depending on the nature of the issue.

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Change to a Degree Plan		Dept./School	College Academic	Deans	COUNCIL ³			Provost	Faculty	President	Board of Trustees
					TEC	UGEC	UAC				
1.	University Requirements — Change in approved course content ⁶	A	A	A	A			A	--	A	--
2.	University Requirements — Add or drop a required course from the University Requirements chart ⁶	A	A	A	A			A	A	A	--
3.	University Requirements — Add or drop a course from a menu within the University Requirements ⁶	A	--	--	A			A	--	A	--
4.	University Requirements — Change hours within a menu on the University Requirements chart ⁶	A	A	A	A			A	A	A	--
5.	Major — Revision of major ^{4,5}	A	A	A	A			A	--	A	--
6.	Major — Adopt or change admission requirements	A	A	A	A			A	--	A	--
7.	Major — Add ^{4,5}	A	A	A	A			A	A	A	I
8.	Major – Discontinue (proposed by the department or college)	A	A	A	A			A	A	A	I
9.	Major – Discontinue (proposed by the Provost)	See below.									
10.	GPA — Revise major or cumulative requirement	A	A	A	A			A	A	A	--
11.	Minor — Revise course selection	A	A	A	I			I	--	I	--
12.	Minor — Add	A	A	A	A			A	--	A	--
13.	Minor – Discontinue (proposed by the department or college)	A	A	A	A			A	--	A	--
14.	Minor – Discontinue (proposed by the Provost)	See below.									
15.	Degree — Add	A	A	A	A			A	A	A	I
16.	Degree – Discontinue (proposed by the department or college)	A	A	A	A			A	A	A	I
17.	Degree – Discontinue (proposed by the Provost)	See below.									
18.	Any change to a graduate degree program	A	A	A	A			A	--	A	--

Provost-Proposed Change		COUNCIL ³						Provost	Department	Dean	TEC	UUAC	Graduate	Faculty	President	Board of Trustees
1.	Major/Graduate Program — Discontinue (proposed by the Provost)	A	R	R		A								A	A	I
2.	Minor — Discontinue (proposed by the Provost)	A	R	R		A								--	A	--
3.	Degree — Discontinue (proposed by the Provost)	A	R	R		A								A	A	I

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COUNCIL ³										
	Change to the Catalog Information	Dept./School	College Academic	Deans	UGEC	UUAC	GRAD	Provost	Faculty	President
1.	General requirements for graduation including course requirements that are common to all majors for all degrees ⁷	--	--	--		A		A	A	A
2.	Admission requirements	--	--	--		A		A	A	A
3.	Policies governing academic probation and suspension	--	--	--		A		A	A	A
4.	Requirements for graduating with honors	--	--	--		A		A	A	A
5.	Other academic policy changes	--	--	--		A		A	--	A

¹ Councils may request additional information about "Information" items. These items are approved as "Consent Agenda."

² The Dean and Department should respond to the Provost's recommendation to close a program in writing. Advise & Respond (R) requires that the voting body should receive the written responses at least one week prior to the vote.

³ All courses that meet University Requirements for general education must go through UGEC. Courses or degrees offered only to students seeking teacher certification must go through the Teacher Education Council. All undergraduate changes must go before the UUAC. All graduate degree plan changes must go through the Graduate Council.

⁴ A minimum of 30 hours is required for a major. A maximum is specified for each degree (e.g., BA, BS). The university minimum for elective hours is 6, unless the requirements of external accrediting bodies make it impossible.

⁵ Program or course changes that apply to any major that includes Teacher Certification will be reviewed by the college, the Teacher Education Council (TEC), and then the UUAC.

⁶ Courses that satisfy ACU's University Requirements (General Education) will normally have lower-level numbering, be free of prerequisites and co-requisites, appeal to more than one or two majors, and "not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession" (SACS 2.7.3). Departments may request exceptions to the first three criteria.

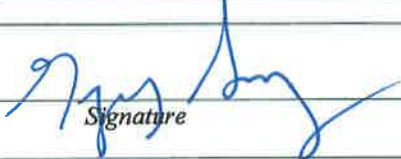
⁷ The UUAC approved the clarification that "general requirements for graduation" means the enumerated items in the "General Requirements for Bachelor's Degrees" section of the catalog.

Revised 3-8-17

Curriculum/Catalog Changes Signature Page

Department/School Chair(s)	
	10/30/18
<i>Signature</i>	<i>Approval date</i>
<i>Signature</i>	<i>Approval date</i>

College Academic Council(s)	
	12-7-2018
<i>Signature</i>	<i>Approval date</i>
<i>Signature</i>	<i>Approval date</i>

Dean(s)	
	12/12/18
<i>Signature</i>	<i>Approval date</i>
<i>Signature</i>	<i>Approval date</i>

Teacher Education Council	
<i>Chair's signature</i>	<i>Approval date</i>

General Education Council	
<i>Chair's signature</i>	<i>Approval date</i>

Undergraduate Academic Council	
<i>Chair's signature</i>	<i>Approval date</i>

Graduate Council	
<i>Chair's signature</i>	<i>Approval date</i>

Provost	
<i>Signature</i>	<i>Approval date</i>

Faculty	
<i>Chair of faculty senate</i>	<i>Approval date</i>

President	
<i>Signature</i>	<i>Approval date</i>

Application for a New Course v10.6

Course ID <i>Subject and Number</i>	ENGR 338 Design of Machine Elements
Date APPROVED	
Date DENIED	

I. Systems and Catalog Information Complete each item.

1	Course Developer	Raymond Smith, LCMfgE
2	Course Teacher	Raymond Smith, LCMfgE or a member of the engineering and physics faculty
3	Course Title	Design of Machine Elements
4	Course Abbreviation (if title is over 30 characters)	
5	College	Arts & Sciences
6	Department	Engineering & Physics
7	Number of Credit Hours	3
8a.	Number of contact hours - lecture	3
8b.	Number of contact hours – lab/activity	0
9	Is the course for a fixed or variable number of credit hours?	Fixed
10	Explanation for variable credit	N/A
11	Is the course repeatable for additional credit?	No
12	Maximum total number of credit hours a student can earn for this course	3
13	What type of course is this? (Select one. Please see Schedule Type definitions above.)	☒ Traditional lecture ☐ Traditional lab ☐ Traditional lecture/lab ☐ Experiential Learning ☐ Seminar ☐ Studio ☐ Thesis

		<u> </u> Dissertation
14	Instructor Workload	3 FTE
15	Grade Mode (check all appropriate):	<u> X </u> Standard <u> </u> Credit/No Credit (undergrad only)
16	Maximum Enrollment	18
17	Catalog Description (50 words or less)	Design of machine components, such as gearing, shafts, transmission components, and application of frictionless bearings.
18	List any prerequisites (course/s, test scores, class standing, major, etc.)	Junior standing, with ENGR 332 Mechanics of Materials. Would like for student to have had ENGR 320 Materials Science.
19	List any co-requisites	None
20	If the course is cross listed, specify the Course ID(s); MUST have signature in Section V from all Department Chairs	None
21	Does this course have any special student costs?	<u> X </u> No <u> </u> Yes (If yes, must attach a <u>completed</u> "Request to Add or Change Course Fees" form. Describe in section IV-F.)
22a	How frequently will the course be offered in the Fall ? All, even or odd years?	None
22b	How frequently will the course be offered in the Spring ? All, even or odd years?	Even
22c	How frequently will the course be offered in the Summer ? All, even or odd years?	None
23	First semester this course will be offered <i>New courses may not be taught under their approved course ID until they appear in the catalog, therefore, no earlier than the coming fall.</i>	Fall 2018- this course was offered as a special topics course in the Fall 2018. Spring 2020
24	List course/s that should be deleted, (Also, include the last semester for course/s being deleted) <i>A course cannot be deleted when it is a requirement in a degree plan in any</i>	None

	department.	
25	Is this course required for a degree/s? <i>If "Yes," attach a revised degree plan(s) reflecting the placement of the new course.</i>	☐ No ☒ Yes
26	Should the addition of this course be retroactively applied to the degree plan it supports?	☒ No ☐ Yes Explanation:
27	Has this course been offered as a Special Topics course?	☒ No ☐ Yes <i>If "Yes," specify the Course ID and enrollment for each term it was taught. (Note: New courses are NOT required to be taught as Special Topics courses prior to being approved. However, a course may be taught once as Special Topics before it is proposed. See the Course Descriptions section of the Catalog for details.)</i>
28	List any courses in which the content overlaps the proposed course. (Course ID and Name) <i>Attach a statement from the instructor/dept chair of the existing course justifying the new offering in Section IV-D.</i>	None

II. Curriculum

1	Degree Plan Explanation of how this course affects degree requirements.	The course will be a depth elective for students pursuing an emphasis in Industrial Engineering within the Bachelor of Science in Engineering degree.
2	Justification State the justification for adding this course to the current curriculum. Represent the need.	Based upon recent (Fall '17 and Spring '18) feedback from the ACU Engineering Industrial Advisory Board, ACU admissions, recent ('17 and '18) senior exit surveys, and the American Society of Engineering Educators, additional depth in engineering disciplines is needed within our degree plan to increase competitiveness of ACU graduates in the job market. To prepare students for working in industry as Mechanical

		Engineer/Designer along with assisting Engineering & Physics faculty with their respective research projects.
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III. Course Design

1. Audience and Course Goal

1	Describe the intended audience, including prerequisite skills.	Junior level and higher students that wish to pursue a career as a Design Engineer or Equipment Designer.
2	State the overarching course goal(s) in performance terms.	1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

2. Competencies and Measurements

	Competency	Measurement
1	Perceive which project requirements are relative to the solving the problem and/or design criteria.	Projects and Final Exam
2	Use of engineering and science principles to solve design problems	Assignments
3	Set up and perform Finite Element Analysis (FEA) on individual components and assemblies to determine the stress state and factor of safety.	Projects
4	Exposure to general industry and industry specific design, material, and testing specifications.	Projects and Final Exam
5	The application of the concept of Fit, Form, and Function as it applies to	Projects

	mechanism design.	
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3. Text and Resources

1. Give the full publication information of the textbook/s and other required resources and outside readings. Undergraduate: *Design of Machine Elements (8th Edition) 8th Edition* by Merhyle F. Spotts, Terry E. Shoup, Lee E. Hornberger 978-0130489890, Pearson
Outside Reading: *Machinery's Handbook, 21st Ed* Industrial Press
Outside Reading: *Autodesk Inventor 2016 and Engineering Graphics: An Integrated Approach*, by Randy Shih, SDC Publications, 2015, ISBN 978-1-58503-974-6.
2. For **combined undergraduate/graduate** courses, make two lists:
 - a. full publication information; label **Undergraduate**.
 - b. full publication information; label **Graduate**. Indicate number of pages required.

IV. Supporting Documentation

Supporting documents must accompany proposal prior to preliminary approval by chair and dean.

1	Library — Submit new course application and syllabus to the Dean of the Library. Consult with the director and establish a deadline for completion of the library report. Attach the signed copy of the Library report.
2	Instructional Design — The application and syllabus must be reviewed by the Adams Center. Attach a copy of the Adams Center Review Letter.
3	Content Overlap — Include one document for each course you listed in Section I-I. Attach statement from instructor/dept chair of existing course justifying the new offering.
4	Departmental Resources — List the resources that support the course and are available only through the department, if applicable. Attach the list of the holdings and the location/s.
5	Resources — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). Attach a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds.

	6	Expenses — List additional expenses needed to implement this course (full-time or part-time faculty, graduate or lab assistants, student employees, travel, special student costs, room renovation, storage facility, etc.). Attach a complete list of all items, the estimated cost of each and the source of the funds.
	7	Justification — Attach all documents referred to in Section II-2
	8	Syllabus — Attach the syllabus for the course based upon the anticipated first-semester offering.
	9	Provide documentation for all additional attachments here

V. Preliminary Approvals

All supporting documentation has been assembled and attached to this application. I believe this course is ready to be presented to appropriate councils. We have a plan to fund this new course.

Course Number and Name ENGR 338

Primary Department

[Signature]
Department Chair

10/30/18
Date

Dean of the College

Date

Cross-listing Department *Add more lines if multiple departments are cross-listing*

Department Chair

Date

Dean of the College

Date

Cross-listing Department *Add more lines if multiple departments are cross-listing*

Department Chair

Date

Dean of the College

Date

VI. Actions *Place all actions on one page.*

Course ID: ENGR 336

Course Title: Design of Machine Elements

1. College Academic Council: (for all courses)

Note: Insert additional lines for College Academic Council action for each college involved in cross-listed courses.

Approved ____ Denied ____ _____
College Dean or Director Date

Approved ____ Denied ____ _____
College Dean or Director Date

2. Graduate Council: (for graduate level courses)

Approved ____ Denied ____ _____
Dean of Graduate School Date

3. Teacher Education Council: (when applicable)

Approved ____ Denied ____ _____
TEC Chair Date

4. University General Education Council: (when applicable)

Approved ____ Denied ____ _____
Provost's designee Date

5. University Undergraduate Academic Council: (*undergraduate level courses*)

Approved ____ Denied ____ _____
Vice Provost Date

6. Academic Provost: (for all courses)

Approved ____ Denied ____ _____
Provost Date

7. President of the University: (for all courses)

Approved ____ Denied ____ _____
President Date

Attach notes, comments, or conditions from appropriate councils:

October 10, 2018

Professor Raymond Smith
Ray.smith@acu.edu
325-674-6609

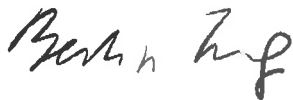
Re: Review of ENGR336

Dear Professor Smith,

Thank you for submitting ENGR336: Design of Machine Elements. I have reviewed it based on the ACU Syllabus Guidelines. I have found the syllabus to meet all requirements. I want to thank you for taking my earlier suggestions and add the items that are missing.

Please note that this letter is not meant to be a final approval in the course application process. Instead it is intended as a reference, which will be read by your department chair and members of the council, who may also have questions or comments of their own.

If you have any questions, please feel free to let me know. Please also let me know if we can be of any help in the design and facilitation of this course.

A handwritten signature in black ink, appearing to read "Benjamin H. F." with a stylized flourish at the end.

Director of Instructional Design
Adams Center

ABILENE CHRISTIAN UNIVERSITY
LIBRARY

M E M O R A N D U M

DATE: 16:02
TO: Ray Smith
FROM: Mark McCallon, Associate Dean for Library Services
RE: New Course Proposal, ENGR 336 – Design of Machine Elements

The library has examined the course application and syllabus and is able to support the proposed course. Please contact Erica Pye (exp10a@acu.edu) , Librarian Liaison to the Department of Engineering and Physics, if additional library resources are needed for the course. Thank you for letting us review the course proposal.



1. Course number and name

ENGR 338 Design of Machine Elements

2. Credits and contact hours

3

3. Instructor's or course coordinator's name

a. Instructor

Raymond Smith, LCMfgE

b. Course coordinator

Raymond Smith, LCMfgE

4. Text book, title, author, and year

Design of Machine Elements (8th Edition) 8th Edition by Merhyle F. Spotts, Terry E. Shoup, Lee E. Hornberger 978-0130489890, Pearson

a. other REQUIRED supplemental materials

None

b. other RECOMMENDED supplemental materials

Machinery's Handbook, 21st Ed Industrial Press
Autodesk Inventor 2016 and Engineering Graphics: An Integrated Approach, by Randy Shih, SDC Publications, 2015, ISBN 978-1-58503-974-6.

5. Specific course information

a. brief description of the content of the course (catalog description)

Provides an introduction to the engineering design concepts and process. Using Engineering Statics, Engineering Dynamics, Mechanics of Materials, along with 3D Parametric Modeling to develop and test a design concept for Fit, Form, and Function.

b. prerequisites or co-requisites

ENGR 131 CAD and Modeling along with ENGR 332 Mechanics of Materials



c. indicate whether a required, elective, or selected elective course in the program

selective elective

6. Specific goals for the course

a. Specific outcomes of instruction

By the end of this course students will be able to:

- ☐ 1. Determine critical mass of shafts, columns, and beams necessary to support the applied loads.
- ☐ 2. Perform stress analysis on 3-D objects and assemblies.
- ☐ 3. Interpret the output of Finite Element Analysis (FEA)
- ☐ 4. Iterate where necessary the digital 3-D models.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

7. Brief list of topics to be covered

- Design considerations and Engineering Analysis
- FEA analysis within Autodesk Inventor
- The application of the concept of Fit, Form, and Function.

8. Records management

• **Prepared by:**

Raymond Smith, LCMfgE

• **Date prepared:**

4 May 2017

• **Date reviewed:**

Class Meeting Times and Location: ENGR 336 will meet Tuesday and Thursday at 9:30 to 10:50 am in OSC Room B35



Required Text and Software: Design of Machine Elements (8th Edition) 8th Edition by Merhyle F. Spotts, Terry E. Shoup, Lee E. Hornberger 978-0130489890, Pearson

Reference Text: *Autodesk Inventor 2016 and Engineering Graphics: An Integrated Approach*, by Randy Shih, SDC Publications, 2015, ISBN 978-1-58503-974-6. The required software for this is: Autodesk Inventor Professional 2016. A free student copy of this software can be downloaded at <http://www.autodesk.com/education/free-software/all>.

Intended Audience This is an elective course for the Engineering major and intended to be completed during their Junior or Senior year.

Contact Information Name: Raymond Smith, LCMfgE, CMfgE

Office: Bennett Gym Room 112C

Phone: 325-674-6609

Email: ray.smith@acu.edu

Office Hours: Office hours can be arranged as needed.

Teaching Philosophy Engineering is a well-respected profession. The public entrusts engineers to be honest, competent, and ethical. Many codes of ethics for these fields indicate that the commitment to protecting the health, safety, and welfare of the public is of paramount importance. These values are in harmony with Christian principles and ideals. Christian engineers should be honest (Matthew 5:37), work hard to ensure competency (Colossians 3:23), and put the public's interest ahead of his or her own (Luke 6:31). In light of these principles, this course will be taught such that you will gain an appreciation for the professional nature of engineering. It will be taught so as to give you every opportunity to begin to develop competency in these fields. This will require homework, quizzes, tests, and group discussion. The instructor especially encourages the discussion of topics that would bear on integrating faith and professional responsibilities (cheating on licensure exams, environmental laws and employment opportunities in developing nations, etc.)

Learning Objectives The activities of the course support the assessment of the following ABET Outcomes: Criterion 3

- 1.) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- 2.) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

Academic Integrity Policy Academic integrity is defined as academic work completed as assigned for each class by the individual or group responsible for the work. Violations of academic integrity and other forms of cheating involve the intention to deceive, mislead, or misrepresent and therefore, are a form of lying. Such actions are contrary to behavioral norms that flow from the nature of God. Academic misconduct includes, but is not limited to, the following: 1) Failure to give credit to sources used in a work in an attempt to present the work as one's own, 2) Submission of papers or projects obtained from another source (e.g., research service or club paper file) as one's own, and 3) Falsifying information orally or in writing. Academic misconduct may result in, but is not limited to, a zero on the assignment and/or an F in the course. Additionally, the department chair, Dean of the College of Arts and Sciences, and the Dean of Student Life will be notified. See the full university policy, including how to appeal a decision, by following this link:

<http://www.acu.edu/campusoffices/studentlife/judicialDocuments/AcademicIntegrityPolicy.pdf>.

The use of Chegg and similar homework solution sites is a violation of academic integrity in at least two ways. First, the solutions you find there were generally made available under conditions that they should not be posted or shared except as required with current students. Second, solutions copied from or aided by consulting a



homework solution site and then submitted for credit are not truly the work of the person submitting them for credit.

ADA Compliance Statement

"Abilene Christian University is dedicated to removing barriers and opening access for students with disabilities in compliance with ADA and Section 504 of the Rehabilitation Act. The Alpha Scholars Program facilitates disability accommodations in cooperation with instructors. In order to receive accommodations, you must be registered with Alpha Scholars Program, and you must complete a specific request for each class in which you need accommodations. If you have a documented disability and wish to discuss academic accommodations, please call our office directly at 325-674-2667."

Title IX

Students are recommended to familiarize themselves with ACU's Title IX policy. This policy can be found at:

<http://www.acu.edu/community/offices/administrative/dean-of-students/sexual-assault-and-anti-harassment-title-ix/anti-harassment-policy.html>

Attendance

Attendance is expected at all class sessions. It is also expected that you arrive promptly. If you are absent or tardy it will negatively affect your participation, homework, Final Exam grades. Instructor reserves the right to remove a student from the class role and participation for excessive absences and/or disruptive behavior.

Grading Policy

Assignments – Assignments will be assigned and will be due no later than the beginning of the assigned class day. You will deposit your Assignment on the designated location on Canvas. Late Homework will not be graded. All quantitative homework solutions must be submitted on engineering paper.

Projects – A portion of your final grade will be based upon projects utilizing computer based design software both in groups and individually. Project requirements will be posted in Canvas. Late Projects will not be graded.

Final Exam - The final exam is scheduled and posted on the ACU Website.

Calculation of Grade-

Assignments.....	35%
2 Project(s).....	30 %
Final Exam.....	25 %
Professionalism.....	10%

90% and above	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
59% and below	F

Cell Phones Cell Phones should be placed on 'Silent' mode while in class. In the case of an emergency you may answer your phone and quietly leave the room and return when you have finished your call. It is not in your best interest to text while in class.

Class Room Culture- If you have a question please be considerate of your fellow classmates.



The mission of ACU: *To educate students for Christian service and leadership throughout the world.*

The mission of the College of Arts and Sciences:

To educate students for worldwide Christian service and leadership through programs of study and other learning experiences that blend a liberal arts education with professional and career education.

The mission of the Engineering and Physics Department *The ACU engineering program strongly supports the university's mission of educating students for Christian service and leadership throughout the world. In support of this mission, ACU engineering graduates will attain: a deep and broad understanding of engineering principles and practices as evidenced by professional employment, continued professional development, and graduate study in engineering or other professional fields. an extensive knowledge of the innovative design processes unique to engineering professionals as demonstrated by using critical thinking skills to contribute to the scientific and technical literature, patents and intellectual property, professional societies, and creative designs. A thorough understanding of Christian service and leadership as shown in their commitments to professionalism, ethics, and service and leadership within the engineering profession, the church, and society.*

Course Schedule (revised 9 Jan 2018)

Week Number	Topic
1	Class Orientation & Engineering Materials (Chapter 14)
2	Fundamentals Principles (Chapter 1)
3	Working Stresses & Failure Theories (Chapter 2)
4	Design of Shafts (Chapter 3)
5	Springs (Chapter 4)
6	Screws (Chapter 5)
7	Belts, Clutches, Brakes and Chains (Chapter 6)
8	Welded and Riveted Connections (Chapter 7)
9	Lubrication (Chapter 8) Ball & Roller Bearings (Chapter 9)
10	Gears (Chapter 10 & 11)
11	Miscellaneous Machine Elements (Chapter 12)
12	Principles of Form Synthesis (Chapter 13)
13	Finite Element Analysis using Inventor 2016
14	Manufacturing & Cost Considerations of Design
15	Final Exam

Instructor reserves the right to modify the course schedule as necessary. Students will be informed via Canvas when such changes have occurred.

See Canvas for additional instructions and/or assignment information.