Approval Chart for Curriculum Changes

A = Approve I= Information Item[1] R= Advise & Respond[2]

Course Number ENGR 322 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.

					COUNCIL[3]					
	Change to a Course	**Dept./School**	**College Academic**	**Deans**	**TEC**	**UGEC**	**UUAC**	**GRAD**	**Provost**	**President**
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.

Approval Chart for Curriculum Changes

A = Approve I= Information Item[1] R= Advise & Respond[2]

	Change to a Degree Plan	Dept./School	College Academic	Deans	COUNCIL[3] TEC	COUNCIL[3] UGEC	COUNCIL[3] UUAC	COUNCIL[3] GRAD	Provost	Faculty	President	Board of Trustees
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	Provost	Department	Dean	COUNCIL[3] TEC	COUNCIL[3] UUAC	COUNCIL[3] 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

Approval Chart for Curriculum Changes

A = Approve I= Information Item[1] R= Advise & Respond[2]

					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)	
Signature	Approval date: 10/30/18
Signature	Approval date

College Academic Council(s)	
Signature	Approval date: 11-20-2018
Signature	Approval date

Dean(s)	
Signature	Approval date: 11/27/18
Signature	Approval date

Teacher Education Council	
Chair's signature	Approval date

General Education Council	
Chair's signature	Approval date

Undergraduate Academic Council	
Chair's signature	Approval date

Graduate Council	
Chair's signature	Approval date

Provost	
Signature	Approval date

Faculty	
Chair of faculty senate	Approval date

President	
Signature	Approval date

Abilene Christian University

Application for a New Course v10.6

Course ID *Subject and Number*	ENGR 322
Date APPROVED	
Date DENIED	

I. Systems and Catalog Information Complete each item.

1	Course Developer	Scott Marshall
2	Course Teacher	Scott Marshall
3	Course Title	Advanced Dynamics
4	Course Abbreviation (if title is over 30 characters)	
5	College	College of Arts and Sciences
6	Department	Department of Engineering and 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.)	_X_Traditional lecture ___Traditional lab ___Traditional lecture/lab ___Experiential Learning ___Seminar ___Studio ___Thesis ___Dissertation

14	Instructor Workload	3 Hours
15	Grade Mode (check all appropriate):	_X_Standard ___Credit/No Credit (undergrad only)
16	Maximum Enrollment	18
17	**Catalog Description** (50 words or less)	Introduction to rigid body, three dimensional Kinematics and Kinetics and vibration in dynamic systems. Topics will include rigid body kinetics and kinematics, , work-energy principle, impulse-momentum principle, damped and undamped vibrations
18	List any prerequisites (course/s, test scores, class standing, major, etc.)	MATH 361, ENGR 221
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	
21	Does this course have any special student costs?	_X_No ___Yes (If yes, must *attach a completed "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?	Odd
22b	How frequently will the course be offered in the **Spring**? All, even or odd years?	None
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 *New courses may not be taught under their approved course ID until they appear in the catalog, therefore, no earlier than the coming fall.*	Fall 2019
24	List course/s that should be deleted, (Also, include the last semester for course/s being deleted)	

	A course cannot be deleted when it is a requirement in a degree plan in any department.	

25	Is this course required for a degree/s? *If "Yes," attach a revised degree plan(s) reflecting the placement of the new course.*	_X_No ___Yes
26	Should the addition of this course be retroactively applied to the degree plan it supports?	_X_No ___Yes Explanation:
27	Has this course been offered as a Special Topics course?	_X_No ___Yes *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.)*
28	List any courses in which the content overlaps the proposed course. (Course ID and Name) *Attach a statement from the instructor/dept chair of the existing course justifying the new offering in Section IV-D.*	PHYS 371

II. Curriculum

1	**Degree Plan** Explanation of how this course affects degree requirements.	This course will be included degree plans as an elective for students wishing to pursue the Mechanical Engineering Track within the degree plan.
2	**Justification** State the justification for adding this course to the current curriculum. Represent the need.	An understanding of rigid body dynamics and vibrations is necessary for the pursuit of a career in the field of mechanical engineering which may involve the design of systems containing massive moving parts and may be subject to vibrational loading.

III. Course Design

1. Audience and Course Goal

1	Describe the intended audience, including prerequisite skills.	The course is intended for students entering their 3rd year of the engineering curriculum that intend to follow the Mechanical Engineering Track. Students will have completed their required Calculus sequence
2	State the overarching course goal(s) in performance terms.	1. Students will be able to solve problems involving rigid body motion 2. Students will be able to characterize the vibration behavior of a dynamic system 3. Students will be able to use their knowledge of rigid body motion to design and build physical systems

2. Competencies and Measurements

	Competency	Measurement
1	Understand fundamentals of Rigid Body motion in three dimensions	Homework, quizzes, Exams
2	Understand application of the principle of Momentum and Energy to problems involving Rigid Bodies	Homework, quizzes, Exams
3	Understand application of the principle of Work and Energy to problems involving Rigid Bodies	Homework, quizzes, Exams
4	Understand application of the principle of Impulse and Momentum to problems involving Rigid Bodies	Homework, quizzes, Exams
5	Understand application of Hamilton's method to solve problems involving Rigid Bodies	Homework, quizzes, Exams
6	Understand application of Lagrange's method to solve problems involving Rigid Bodies	Homework, quizzes, Exams
7	Understand the characteristics of free and forced vibrations in an undamped dynamic system	Homework, quizzes, Exams

8	Understand the characteristics of free and forced vibrations in a damped dynamic system	Homework, quizzes, Exams
9		

3. Text and Resources

1. Give the full publication information of the textbook/s and other required resources and outside readings.

Engineering Dynamics, *3rd Edition*, by Ginsberg, J. Cambridge University Press, 2007. ISBN 978-0521883030

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 322

Primary Department

Department Chair

10/30/18
Date

Dean of the College

11/27/18
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
Dean of the College

Date

Date

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

Course ID: _____

Course Title: _____

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 16, 2018

Dr. Scott Marshall
OSC137A
Scott.marshall@acu.edu
325-674-6539

Re: Review of ENGR321

Dear Dr. Marshall,

Thank you for submitting ENGR321 Advanced Dynamics and Vibration. I have reviewed them based on the ACU Syllabus Guidelines and find the syllabus meeting the requirements. One suggestion I would make is to describe your course project as you would for the homework and exams. If you want, you can change it yourself. There is no need to send the syllabus to us for further review.

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.

Director of Instructional Design
Adams Center

ABILENE CHRISTIAN UNIVERSITY

LIBRARY

M E M O R A N D U M

DATE: October 17, 2018

TO: Scott Marshall

FROM: Mark McCallon, Associate Dean for Library Services

RE: New Course Proposal, ENGR 321 – Advanced Dynamics

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.

Syllabus for **Advanced Dynamics and Vibrations** (ENGR 322; 3 credit hours)
Fall 2019, TR 8:00-9:20 AM
Onstead Science Center 371

Catalog Description: Introduction to rigid body, three dimensional Kinematics and Kinetics and vibration in dynamic systems. Topics will include rigid body kinetics and kinematics, work-energy principle, impulse-momentum principle, damped and undamped vibrations
Prerequisites: MATH 361 and ENGR 221
Credit Hours: 3.0 Contact hours: 3.0

Course website: Lecture notes, assignments, additional readings/resources and grades will all be distributed via the Canvas site for the course

Instructor: Scott Marshall, Instructor of Engineering and Physics
Email: scott.marshall@acu.edu
Office: OSC 137A
Office hours: T/TH 12:00-1:30 AM, W 8:00-11:00 AM and 1:00-2:00 PM

Phone: (325) 674-6539, (325) 518-0041 (Cell)
Please limit cell phone calls to emergencies if after 5 PM.

Required Text: *Engineering Dynamics, 3rd Edition*, by Ginsberg, J. Cambridge University Press, 2007. ISBN 978-0521883030

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

1. Understand fundamentals of Rigid Body motion in three dimensions
2. Apply the principle of Momentum and Energy to solve problems involving Rigid Bodies
3. Apply the principle of Work and Energy to solve problems involving Rigid Bodies
4. Apply the principle of Impulse and Momentum to solve problems involving Rigid Bodies
5. Apply Hamilton's method to solve problems involving Rigid Bodies
6. Apply Lagrange's method to solve problems involving Rigid Bodies
7. Analyze the characteristics of free and forced vibrations in an undamped dynamic system
8. Analyze the characteristics of free and forced vibrations in a damped dynamic system

These competencies will be assessed using homework, exams, projects and class participation.

ABET Outcomes:
The activities of this course support the assessment of following ABET outcomes

Criterion 3:
1.) An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.

Grading:

Homework & In-class Work	20%
Exams (two, 15% each)	30%
Project	25%
Final Exam	25%

Grade scale:
89.5% and above: A
79.5% to 89.4%: B
69.5% to 79.4%: C
59.5% to 69.4%: D
Below 59.5%: F

Homework: Homework will be assigned weekly, with additional problems assigned in class. ***No late homework will be accepted.*** If you simply cannot finish by the deadline, turn in what you have done on time to receive credit for the problems you have completed. Working in groups is encouraged, though copying is not allowed.

Exams: There will be two **Exams** for the course and one comprehensive **Final Exam**. The first exam will cover the kinematics and kinetics of particles. The second exam will cover the planar kinematics and kinetics of rigid bodies. The final exam will cover select material from the two midterms as well as the three-dimensional kinematics and kinetics of rigid bodies and vibrations.

Grading Policy: My goal in grading is to assess how well you know the material. As a result, grading will be done on a CORRECT/INCORRECT basis, with no partial credit given. For a problem or exam question to be considered correct, you must show BOTH the correct work for finding the solution AND the correct answer. If either of these two elements are missing, the answer will be considered incorrect.

Correction Policy: In keeping with my goal of getting you to know the material, students will have the opportunity to submit corrections for problems that they missed on both homework and midterm exams. In order for a correction to be accepted, you must include a *Documented Problem Solution* for each correction. For homework, students will receive ***full credit*** for corrections submitted. For exams, students will receive ***half credit*** for corrections submitted. Corrections will be accepted up to one week after the initial graded assignment or exam is returned. You are encouraged to come by my office during office hours for help on homework and exam corrections.

Documented Problem Solution: A documented problem solution lays out in explicit written format the steps taken to solve a problem. A documented problem solution must include the following information:

1.) Identify the type of problem.
2.) List all known information and identify what you are being asked to solve for.
3.) Solve the problem, explicitly describing in written form the steps you are taking.

Project: The project in the course will include hand calculations, some form of computer program (Maple, Excel, or Matlab), and a written report. These will be graded based on completeness of the project, creativity of your solution, and grammar and organization of the final report.

Attendance: A large component of this class is performed during class time. If you miss class, you will need to work with your team to reschedule a time to work on your homework and/or project. Also, ***you may be withdrawn from the course if you miss more than 6 classes.***

Academic Integrity
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) Failing to give credit to sources used in a work in an attempt to present the work as one's own, 2) Submitting papers or projects obtained from another source (e.g., research service or club paper file) as one's own, 3) Falsifying information orally or in writing, and 4) Receiving, giving, or using unauthorized aid on an examination or quiz. 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/academics/provost/policies/index.html.

University 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.

ACU Title IX Statement
At ACU, we strive to comply with all applicable legal requirements prohibiting, preventing, and responding to harassment against any member of the ACU community **(e.g., Title VI, VII, and IX)**. Moreover, as a Christian community, ACU has committed itself, unequivocally, to ensuring a working and learning environment in which the dignity of every individual is respected. For further information regarding Title IX and other anti-harrassment policies, please visit http://www.acu.edu/titleix.

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.

Engineering Program Educational Objectives: The ACU engineering program strongly supports the university's mission of educating students for Christian service and leadership throughout the world. In support of the university mission and in response to the needs of program constituents, the Program Educational Objectives (PEOs) are that within a few years of graduation:

1. Alumni are succeeding in engineering practice or other diverse fields that value analytical, problem solving, and professional practice skills.
2. Alumni are engaging in life-long learning that builds upon foundational knowledge acquired in their undergraduate education through graduate study, career-specific or other professional training.
3. Alumni are glorifying God through thoughtful integration of work and life facilitating service to others through their profession.

Unique Christian Perspective: This course, as with many of the courses within the Department of Engineering and Physics, gives us the opportunity to study the universe that God has made and to learn ways in which we can utilize the knowledge we gain to help others and to further God's Kingdom here on earth.

Tentative Schedule

The following schedule is tentative. I reserve the right to modify the schedule as necessary with prior notice.

Date	Week	Reading	Topics and Events
	1		Vector and Particle Kinematics Review
	2		Relative Motion
	3		Kinematic of Constrained Rigid Bodies
	4		Linear and Angular Momentum of Rigid Bodies
	5		Inertia Properties of Rigid Bodies
	6		Newton Euler Equations of Motion
	7		Impulse-Momentum of Rigid Bodies
	8		Work-Energy principle of Rigid Bodies
	9		Exam 1
	10		Introduction to Analytical Mechanics
	11		Langranges Equations
	12		Hamilton's Principle
	13		Undamped Vibrations
	14		Damped Vibrations
	15		Exam 2