Faculty Senate Course Form

Effective Date:	Submission Date:
Department:	College of: Course
Contact Person:	Prefix:
Create New, Revise, Inactivate, or Rea	activate: Course #:

Course Form:

- Used to create new course numbers or new prefixes.

- Used to change Name, Grading, Hours, Description, Reactivate

- Used to inactivate a course from the current catalog. Courses are never deleted. They are made inactive and can be legislated to become active again.

1. Purpose/Justification for the Changes:

2. Is this related to, and/or affect, any other department/college/unit curricula or programs at Pittsburg State University? *If "Yes", please provide an explanation. Provide documentation of any discussions (e.g. copies of emails, memos, etc.) that have occurred.*

Yes No

3. Is this course to be considered for General Education? If "yes" this requirement will need approval of the General Education Committee after the revisions have been approved by Faculty Senate. The General Education Course Approval form will also need to be submitted.

Yes No

4. Will this course be required of any education majors? If "yes," this requirement will need approval of the Council for Teacher Education before upload to " College Curriculum Legislation" in SharePoint.

Yes

5. Will additional resources or costs be required?

No

Yes No

If so, what will be needed?

PSU Faculty Senate 24-25

6. Will any additional course fees be required (e.g. equipment, clothing, travel, licensing, etc.)? *If "yes," complete the Course Fee Form on the Faculty Senate website, it will need to gain approval of the President's Council.*

Yes No

7. Objectives/Student Learning Outcomes for NEW courses only, as it will appear in the syllabus: Attach with upload.

8. Assessment Strategies (e.g. exams, projects, university rubric, etc.), as it will appear in the syllabus: Attach with upload.

Course Numbers cannot be changed, only created.

	Exsisting	New/Proposed
Title:		
Course Number:		
Credits:		
Grading System:		
Pre/Co-Requisite(s):		
Course Description:		

Authorization Sign-Off

Checklist: Check once verifiied.

	Req
	Syl
	Assi

equired fields completed. Syllabus attached for new courses ssignment Strategies Attached

-Approved: Department Cha	air/Director
Date:	Signature, Chair/Director:
-Approved: College Curricu Date: 1/13/25	Ilum Committee Signature, Committee Chair:
-Approved: Dean of College Date: <u>1/13/25</u>	e Signature, Dean:
-Approved: Council for Tea Date:	cher Education (if applicable) Signature, Council Chair:
-Approved: University Under Date:	ergraduate Curriculum Committee Signature, Committee Chair:
-Approved: Faculty Senate	Signature, Recorder Faculty Senate:

Originating Departments(s): After completing this form, please upload it to the SharePoint, within the appropriate College folder, "Preliminary Legislation", to allow for review and questions. Any modifications should be saved as "original file name.v2.docx" and uploaded as well.

Following final College Curriculum Committee approval, please apply the appropriate signatures, and send them to your College Administrator.

(Prepared by: David Miller 08/2024)

COURSE TITLE: MECET 522-01 - Dynamics

COURSE SCHEDULE: Face-to-Face, Tuesday/Thursday, 9:30-10:45am, KTC W201/202

INSTRUCTOR:	David Miller, PhD	Phone:	(620) 235-6115
	Office: KTC W224c	E-mail:	djmiller@pittstate.edu
	Office Hours: MW 1:30-2:30, TTh 1:00	-2:00, F	10:00-11:00

COURSE DESCRIPTION: MECET 522 - Dynamics. 3 hours. (3 hours lecture). Study of forces acting on rigid bodies in motion. Kinematics and kinetics of particles, systems of particles, dynamics of machines and vibrations. Forces and acceleration analysis using Newton's second law and energy and momentum methods. Includes software simulations of impact, vibration, etc. Prerequisite: MECET 220 Statics.

TEXTBOOK/MATERIALS REQUIRED:

- <u>Required</u>: Beer, FP, Johnston, ER, Cornwell, P, and Self, BP. *Vector Mechanics for Engineers: Dynamics*. (12th Ed.), McGraw-Hill. ISBN: 9781259977305
- Scientific Calculator, Engineering Paper, Electronic Data Storage
- *FE Supplied Reference Handbook.* Free PDF from <u>NCEES website</u>. (Optional, requires account)

COURSE OBJECTIVES:

- Objective 1 To develop a basic understanding of inertial and accelerated coordinate system kinematics. (ABET Objective 1)
- Objective 2 To increase a student's knowledge of Newton's Laws of Motion and universal Gravitation. (ABET Objective 1)
- Objective 3 To develop understanding of conservation of momentum and energy. (ABET Objective 1)
- Objective 4 To gain knowledge of dynamics of systems of particles, rigid bodies, and machines and use appropriate theory or relationships to calculate dynamics behaviors and performance parameters of dynamic systems and machines. (ABET Objective 1)
- Objective 5 To learn to utilize state-of-the-art software simulation tools to model systems of particles. (ABET Objective 2)

COURSE TOPICS:

- Motion of a Point
- Force, Mass & Acceleration
- Energy Methods
- Momentum Methods
- Planar Dynamics of Rigid Bodies
- Planar Kinematics of Rigid Bodies

- Energy & Momentum in Rigid-body Dynamics
- Mass flow
- Mechanical Vibrations & Stability
- **GRADING SYSTEM:** Grades will be based on the following scale and proportions:

90 - 100%	А		
80 - 89	В	Attendance/Participation	10%
70 - 79	С	Design Problems/Tutorials	15%
60 - 69	D	Tests	50%
0 - 59	F	Final Examination	25%

MECET 522 - Dynamics

TENTATIVE SCHEDULE OF ACTIVITIES

Week	Date	Class Content	Reading	Notes
1	08/20 08/22		Ch. 11 -	Syllabus Quiz
2	08/27 08/29	Intro, Motion of a Point		SolidWorks Tutorial
3	09/03 09/05	Planar Kinematics of Rigid		
4	09/10 09/12	Bodies	Ch. 15	Ex #1: Ch 11 & 15
5	09/17 09/19	Force Mass & Assolution	Ch 12	
6	09/24 09/26	Force, mass & Acceleration	Cll. 12	
7	10/01 10/03		Ch 16	SolidWorks Tutorial
8	10/08 10/10	Tranar Dynamics of Rigid Bodies	CII. 10	Ex #2: Ch 12 & 16
9	10/15 10/17		Ch 12	SolidWorks Tutorial
10	10/22 10/24	Energy & Momentum Methods	CII. 15	
11	10/29 10/31	Energy & Momentum in Rigid- body Dynamics	Ch. 17	SolidWorks Tutorial
12	11/05 11/07	Sustama of Dorticlas	Ch. 14 -	
13	11/12 11/14	Systems of Fatteles		Ex #3: Ch 13, 14, 17
14	11/19 11/21	Vibrations, Stability	Ch. 19	SolidWorks Tutorial
15	11/26 11/28	Thanksgiving Break – No Class		
16	12/03 12/05	Review for Final Software Practical Exam		
17	12/12	Final Exam 9:30-11:20 am		

Pittsburg State University encourages students to take full advantage of campus resources. Information about the campus resources and other information, notifications, and policies (academic integrity, dead week, etc.) students should be aware of, can be found through the syllabus supplement link for the current semester that can be found on PSU's web site at https://www.pittstate.edu/registrar/syllabus-supplement.html

Additional Details/Descriptions:

<u>Course Prerequisites</u>: In order to succeed, students must be familiar with algebra, geometry, trigonometry, vectors, free body diagrams, differential and integral calculus, as well as concepts of physical units (mass, force, acceleration, work, energy, area, length, time), orders of magnitude, scientific notation, and numerical precision. Students should have a basic understanding of the Windows or Mac operating system (zipping and unzipping files, opening and saving files, etc). Use of Canvas and the Internet are required in this course. Prior knowledge about 3D modeling and simulation using SolidWorks is required.

<u>Attendance/Participation</u>: Attendance and meaningful participation in group work are considered in evaluating performance in the work place and may be considered in this class. The course meets for lecture one hour and 15 minutes twice a week. Attendance may be taken before each meeting; an absence is defined as not being present at the time of roll call. Students with more than 3 unexcused absences may have their grade lowered by a letter grade; after 6 absences they may be dropped from the class at the instructor's discretion. Students not participating in weekly group activities may receive no points for that activity; determination of meaningful participation is up to the instructor. In-person courses may shift to online activities in the event of campus closure/inclement weather; check Canvas for additional requirements should this become necessary.

<u>Classroom Etiquette</u>: Students are strongly encouraged to participate in the lectures through early preparation and questions or comments in class but are asked not to monopolize the entire class period. Students are required to behave in a professional manner and respect the learning environment of others. If students must come in late or leave early, please notify the instructor beforehand and do so in a quiet, non-disruptive manner. Please silence and store all electronic devices and refrain from engaging in distracting activities on the computers. The instructor reserves the right to remove any device deemed to be causing a disruption - this includes, but isn't limited to: cell phones, tablets, eReaders, eCigarrettes.

Grading Policy: Students must maintain a passing grade in the following course categories: Design Problems/Tutorials, Tests, and Final Exam. A failing grade in any of these categories will result in a maximum final grade of D in the class, regardless of the grades in the other class categories. Grading policies and rubrics for individual assignments will be provided at the time of announcement.

Homework: Homework problems will be posted covering each topic and discussed in class. Homework will not be graded; rather they are meant for students to complete prior to a given class period to aid in the discussion. A student having difficulty with a homework problem is encouraged to discuss the problem with fellow students, tutors and the instructor. It is strongly recommended that students KEEP UP WITH THE HOMEWORK!!!

<u>Methods</u>: Solutions to problems solved on tests and homework must be logical and based on the subjects of the course. A solution must be understood by the student, fellow students, instructor, and other individuals, today and in the future. A standard solution approach will be required for all homework to support clear and concise communication of information. A solution will include: **name** and **date**, **design conditions** (given), **assumptions**, **formula**, **free body diagram**, **sketch** (forces, angles, areas, key points) and clearly identified **answer** (with units). Illegible solutions may result in no credit.

<u>Missed and Late Work</u>: No work will be accepted after the given due date unless due to a documented medical necessity or a documented school event. With the exception of documented emergencies, any missed work must be discussed in advance through email. If a student must miss class due to illness, that student should contact the faculty via email as soon as possible to make arrangements.

Design Problems/Tutorials: Short real-world problems or software tutorials in simulation and analysis software packages will be assigned at various points throughout the semester to familiarize students with state-of-the-art tools used in systems analysis. Some class time may be given for work on tutorials, but it is expected that students spend time outside of class to complete the required work.

<u>**Tests</u>**: Three equally weighted tests will be given to evaluate the student's understanding of the course topics. Tests are comprehensive and administered on CANVAS during the normal class meeting time. Students will be allowed to use *the FE Supplied Reference Handbook* during tests (copies will be provided for use during the exam); other than this reference, all tests will be closed book, closed notes and closed homework. Partial credit MAY be given based on student's hand written calculations at the instructor's discretion. Calculation sheets must be turned in at the conclusion of the exam and must follow the guidelines outlined in the Methods section above. Rescheduling tests will only be done under special circumstances and only by notifying the instructor ahead of time via email.</u>

<u>Quizzes</u>: There are no scheduled quizzes; however, the instructor reserves the right to give quizzes at his discretion.

Final Examination: The final exam for this course will consist of two portions: a classical exam given during the final exam period scheduled for the course and a practical portion to be administered during one of the last class periods. The written exam will comprehensively cover lecture topics and will follow the format for the other unit exams; the practical portion will be administered using SolidWorks and will consist of topics covered in the tutorials.

Software: The course will be administered with the Canvas system. The site will maintain course materials and be used for communications, problem submissions and grading. The site should be checked frequently. Exams use the Respondus Browser, so please make sure you are set up beforehand. The design problems/tutorials require students to have access to SolidWorks. This software is available in many labs in the KTC, but in many cases there are versions available for use on personal computers. Contact the instructor if you wish to obtain software for your own personal machine. Most Mac or Chrome computers do NOT support SolidWorks.

<u>Academic Dishonesty</u>: Submitting someone else's work as your own will not be tolerated in this class. Working together on homework assignments is encouraged, but EACH individual must show ALL work for EVERY problem themselves. Examples of academic dishonesty include, but aren't limited to: cheating on assignments or tests, submitting someone else's work as your own, giving your work to someone else, use of solution manuals/assignments from previous semesters, not citing sources on a writing assignment. Determination of what is or is not academic dishonesty is at the discretion of the instructor. If your work is considered to be an act of academic dishonesty all parties will automatically receive a zero on that assignment, and the University Office of Student Rights and Responsibilities will be notified. Your actions could also cause you to receive an 'F' in the course and could result in severe penalties, up to and including dismissal from the university.

<u>Communication Policy</u>: Students are encouraged to interact with the instructor outside of class in person, via phone conversations and over the Internet. Questions sent via Canvas or email will typically be answered within less than 24 hours if received between 8:00am Mondays and 4:00pm Fridays; however, any questions asked outside of the "normal business week" may result in longer than normal response times. The instructor will not discuss homework/tests/assignments within 24 hours of the due date or 24 hours of when they are handed back.

SPECIAL CONCERNS: Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact me as soon as possible to make necessary accommodations; 7-10 days prior notice prior to an exam is appreciated to allow time to provide necessary materials to the Testing Center.