

# ME 243: ACCIDENT BIOMECHANICS RECONSTRUCTION

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## In Workflow

1. ME Committee Chair (akuma@csus.edu)
2. ME Chair (akuma@csus.edu)
3. ECS College Committee Chair (troy.topping@csus.edu)
4. ECS Dean (kevan@csus.edu)
5. Academic Services (torsetj@csus.edu;%20212408496@csus.edu;%20cnewsome@skymail.csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (james.german@csus.edu;%20celena.showers@csus.edu)
8. Dean of Graduate (cnewsome@skymail.csus.edu)
9. Catalog Editor (212408496@csus.edu;%20torsetj@csus.edu;%20cnewsome@skymail.csus.edu)
10. Registrar's Office (wwd22@csus.edu;%20w lindsey@csus.edu;%20sac19595@csus.edu;%20danielle.ambrose@csus.edu;%20h.skocilich@csus.edu;%20205109584@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

## Approval Path

1. Thu, 29 Nov 2018 02:54:12 GMT  
Akihiko Kumagai (akuma): Approved for ME Committee Chair
2. Thu, 29 Nov 2018 02:59:05 GMT  
Akihiko Kumagai (akuma): Rollback to Initiator
3. Mon, 15 Apr 2019 18:40:03 GMT  
Akihiko Kumagai (akuma): Approved for ME Committee Chair
4. Mon, 15 Apr 2019 18:40:42 GMT  
Akihiko Kumagai (akuma): Approved for ME Chair
5. Fri, 03 May 2019 17:39:17 GMT  
Troy Topping (troy.topping): Rollback to ME Chair for ECS Committee Chair
6. Tue, 22 Oct 2019 22:15:55 GMT  
Akihiko Kumagai (akuma): Rollback to ME Committee Chair for ME Chair
7. Tue, 22 Oct 2019 22:18:09 GMT  
Akihiko Kumagai (akuma): Rollback to Initiator
8. Wed, 23 Oct 2019 21:01:47 GMT  
Akihiko Kumagai (akuma): Approved for ME Committee Chair
9. Wed, 23 Oct 2019 21:02:29 GMT  
Akihiko Kumagai (akuma): Approved for ME Chair
10. Fri, 25 Oct 2019 17:38:39 GMT  
Troy Topping (troy.topping): Approved for ECS College Committee Chair
11. Fri, 25 Oct 2019 19:21:53 GMT  
Kevan Shafizadeh (kevan): Approved for ECS Dean

## New Course Proposal

Date Submitted: Wed, 23 Oct 2019 21:00:17 GMT

**Viewing: ME 243 : Accident Biomechanics Reconstruction**

**Last edit: Fri, 25 Oct 2019 17:37:40 GMT**

Changes proposed by: Jose Granda (101042041)

### Contact(s):

Name (First Last)	Email	Phone 999-999-9999
JOSE GRANDA	grandajj@ecs.csus.edu	530-9023165

### Catalog Title:

Accident Biomechanics Reconstruction

### Class Schedule Title:

Accident Biomechanics Reconst

### Academic Group: (College)

ECS - Engineering & Computer Science

**Academic Organization: (Department)**

Mechanical Engineering

**Will this course be offered through the College of Continuing Education (CCE)?**

No

**Catalog Year Effective:**

Spring 2019 (2019/2020 Catalog)

**Subject Area: (prefix)**

ME - Mechanical Engineering

**Catalog Number: (course number)**

243

**Course ID: (For administrative use only.)**

TBD

**Units:**

3

**In what term(s) will this course typically be offered?**

Fall, Spring

**Does this course require a room for its final exam?**

Yes, final exam requires a room

**Does this course replace an existing experimental course?**

Yes

**This course replaces the following experimental course:**

ME 296W - Accident Biomechanics

**This course complies with the credit hour policy:**

Yes

**Justification for course proposal:**

It has been successfully taught three times. Course is a special application of Advanced Design, Dynamics, Finite element modeling, Multi Body Simulation and Accident Reconstruction combined into an advanced course. The mechanism and cause of injury in vehicles is of much interest to vehicle manufacturers and vehicle consumers. Knowing the mechanisms that produce injuries can influence the mechanical design of vehicles in order to improve their safety. Injuries also occur with the interaction of people with their environment, whether walking, running, tripping or falling. The human body can be studied as a system of rigid and flexible multi-bodies. The objective of the course is to be the study of the human body kinematics and dynamic biomechanics in interaction with human activities and accidents. The study of the kinematics and dynamic forces that cause injury in different situations limits the scope of the subject in the class.

**Course Description: (Not to exceed 80 words and language should conform to catalog copy.)**

Study of the interaction of the human body kinematics and dynamic biomechanics in accidents involving the work place, activities and vehicles. Impact injury mechanisms, response of the human body using computer models and software analysis tools. Biomechanical response to impact, and tolerance levels. Human factors that influence the biomechanical reactions of people with their vehicles and the environment. Photographic and video analysis, computer graphics, and computer simulations. Forensic engineering to determine the dynamic forces that cause injury in different situations.

**Are one or more field trips required with this course?**

No

**Fee Course?**

No

**Is this course designated as Service Learning?**

No

**Does this course require safety training?**

No

**Does this course require personal protective equipment (PPE)?**

No

**Does this course have prerequisites?**

No

**Does this course have corequisites?**

No

**Graded:**

Letter

**Approval required for enrollment?**

No Approval Required

**Course Component(s) and Classification(s):**

Seminar

**Seminar Classification**

CS#05 - Seminar (K-factor=1 WTU per unit)

**Seminar Units**

3

**Is this a paired course?**

No

**Is this course crosslisted?**

No

**Can this course be repeated for credit?**

No

**Can the course be taken for credit more than once during the same term?**

No

**Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc."**

Students will be able to:

- 1) Develop a systematic approach to determine the forces that cause injuries in relation to accidents of different kinds involving people, vehicles, machinery, work place, sports.
- 2) Develop a working knowledge of the computer simulation and analysis methods and tools needed to conduct the biomechanics of accident reconstruction and injury causation investigation.
- 3) Explain the forces that cause injury and how they relate to mechanical design.
- 4) Explain the biomechanics of motion and how that relate to injuries caused by daily activities, sports and the work place.

**Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.**

Students will be assessed by quizzes (ELOs 1, 3, 4) , exams (ELOs 1-4) and their projects (ELOs 3 and 4).

**For whom is this course being developed?**

Majors in the Dept

Majors of other Depts

**Is this course required in a degree program (major, minor, graduate degree, certificate?)**

No

**Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?**

No

**Will there be any departments affected by this proposed course?**

No

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

## University Learning Goals

### Graduate (Masters) Learning Goals:

Critical thinking/analysis  
Communication  
Information literacy  
Disciplinary knowledge  
Intercultural/Global perspectives  
Professionalism  
Research (optional)

Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

Is this a Graduate Writing Intensive (GWI) course?

No

Please attach any additional files not requested above:

ME243\_Syllabus\_F2019.docx

### Reviewer Comments:

**Akihiko Kumagai (akuma) (Thu, 29 Nov 2018 02:59:05 GMT):**Rollback: Hi Jose, please correct the title to ACCIDENT BIOMECHANICS AND RECONSTRUCTION. Tanks. Aki

**Troy Topping (troy.topping) (Fri, 03 May 2019 17:39:17 GMT):**Rollback: ELOs not listed in assessment strategies. Discuss prerequisites.

**Akihiko Kumagai (akuma) (Tue, 22 Oct 2019 22:15:55 GMT):**Rollback: Map assessment items to ELOs.

**Akihiko Kumagai (akuma) (Tue, 22 Oct 2019 22:18:09 GMT):**Rollback: Please map assessment items to ELOs.

Key: 13856