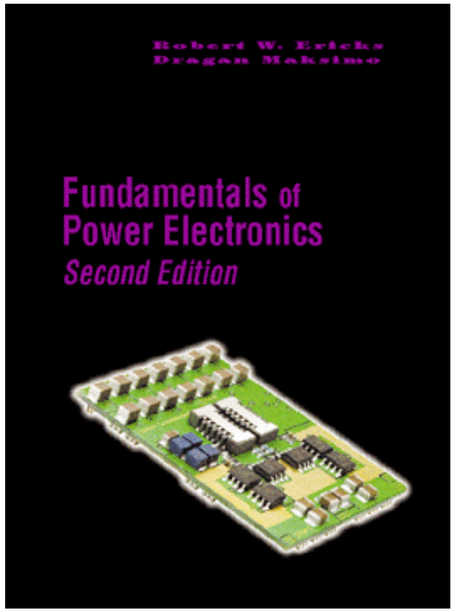
Introduction to Power Electronics

- Instructor: Prof. Robert Erickson
  - Department of Electrical, Computer, and Energy Engineering
  - Colorado Power Electronics Center
  - University of Colorado, Boulder
- Optional textbook:
  - Erickson and Maksimovic, Fundamentals of Power Electronics, second edition, Springer, ISBN 0-7923-7270-0.



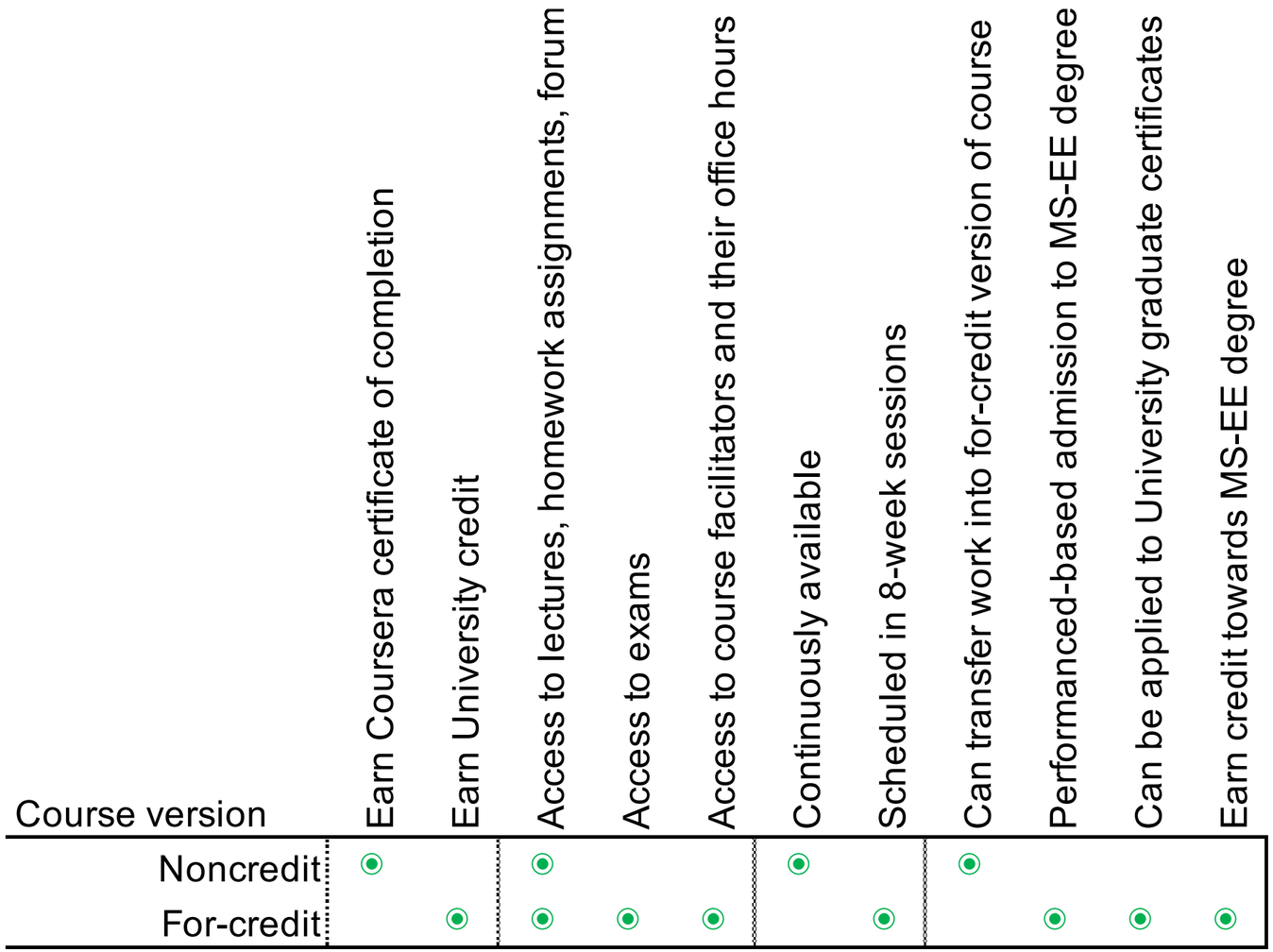
- Assumed prerequisite knowledge
  - A 3-4 semester sequence of undergraduate EE circuits and electronics courses

Introduction to Power Electronics
University of Colorado Boulder

- Specialization: Introduction to Power Electronics
  - ECEA 5700 Introduction to Power Electronics (this course) [0.8 CH]
  - ECEA 5701 Converter Circuits [1.0 CH]
  - ECEA 5702 Converter Control [1.2 CH]
  - ECEA 5703 Magnetics for Power Electronics Converters [1.0 CH]

- Covers the same material as our on-campus course
  ECEN 4797/5797: Introduction to Power Electronics

Non-credit vs. for-credit versions



Enrollment changes

- Switching from non-credit to for-credit version of a course
  - Can be done at any time
  - Pay university tuition for the for-credit version
  - Any work saved in non-credit version is automatically transferred
- Dropping a course
  - In a for-credit course: can drop within 14 days of enrollment
  - Full tuition refund is given and course does not appear on transcript
- Withdrawing from a course
  - In a for-credit course: can withdraw at any time before exam is accessed
  - No tuition refund is given, course appears on transcript with “W” grade
  - Course does not impact grade-point average
- At end of 8-week session of for-credit course
  - If you have not dropped or withdrawn, then your course grade is computed and entered into your University of Colorado transcript

Grading: For-credit course

- Homework assignments
  - One per week, 3 total
  - Unlimited attempts are allowed
- In-video quizzes
  - Not graded
  - Short questions that reinforce specific points related to the lectures
- Examination preparation materials
  - In the for-credit version of this course, module 4
  - A practice exam, not graded
  - Check yourself before accessing the graded exam
- Proctored examination
  - In the for-credit version of this course
  - Similar to the homework assignments, but: closed book, timed 2 hours.

Grading: For-credit course

- Homework assignment #1
  - Boost converter simulation
  - Weighting: 15%
- Homework assignment #2
  - Converter analysis
  - Weighting: 20%
- Homework assignment #3
  - Equivalent circuit modeling
  - Weighting: 15%
- Examination
  - To cover material of homework assignments
  - Weighting: 50%

Course letter grades

A	92% - 100%
A-	90% - 91%
B+	88% - 89%
B	82% - 87%
B-	80% - 81%
C+	78% - 79%
C	72% - 77%
C-	70% - 71%
D+	68% - 69%
D	56% - 67%
F	0% - 55%

Grading: Non-credit course

- Homework assignments
  - One per week, 3 total
  - Unlimited attempts are allowed
  - To earn Coursera certificate of completion, must earn passing grades in all three assignments
  - Typical passing threshold: 70%
- In-video quizzes
  - Not graded
  - Short questions that reinforce specific points related to the lectures

What's on the Course Site

- Recorded lectures
- Slides used in each lecture
- Homework assignments
- Solved sample problems
- Simulation files
- Examination preparation materials

For the first week of class:

- View lectures for Module 1
- Do homework assignment #1, Simulation of a Boost Converter