# Course Description

**AP® Physics: Challenging Concepts from Physics 1 & Physics 2**

We, as co-editors, are so pleased that you are using the Davidson Next A.P. Macroeconomics program. We have carefully designed this program to help A.P. students and teachers learn the most important and challenging concepts in introductory macroeconomics. We have carefully chosen fourteen concepts, from Nominal and Real Values to the Foreign Exchange Market. The importance and challenge of these concepts have been affirmed by data relating to A.P. test performance in macroeconomics provided by the College Board.

For each of the fourteen concepts, there will be questions to assess whether students are ready for the new material, a video lecture of the material covered, and several assessment questions. We have chosen as presenters both secondary school and college faculty who have generally been involved with A.P. economics for many years now. They combine the discipline knowledge to explain the material with the experience of working with high school A.P. students in these challenging areas.

We are persuaded that if students engage properly the content of a unit and work carefully through all the assessment questions that they will have a very strong mastery of the concept. Such knowledge will serve them well in taking the A.P. Macroeconomics exam and in taking subsequent courses in economics.

We are very excited about this novel project. To that end, we so hope that you will provide us any feedback or suggestions to improve this work.

Your co-editors,

Sally Meek, Plano Senior High School (Texas) and Clark Ross, Davidson College (North Carolina)

# Prerequisites

Prior knowledge:  In presenting these challenge concepts there is an assumption that you have knowledge of basic economic concepts. You should know and expect to see these concepts mentioned:

•   scarcity

•   opportunity costs production possibility frontiers

•   market supply and demand

•   business cycle

•   measures of national output, for instance, GDP

# Course Overview and Recommended Usage

**Flexibility in Units**

These 14 units (concepts) were designed with the intent of flexibility. These can be used in any order, but we have a recommended order if you would like to use all of them.

**For Students and Teachers**

The units can be used in a variety of ways:

• by individual students in order to enhance their understanding of AP Macroeconomics

• by teachers to help them plan and/or to use in the classroom as a teaching tool

• assigning videos for students to watch (using a flipped classroom environment)

• as tutorials before the AP exam

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| **Unit #** | **Name** | **Unit Author** |
| 1 | Acceleration | Dolores Gende |
| 2 | Force Diagrams | Peggy Bertrand |
| 3 | Momentum | Terri McMurray |
| 4 | Rotational Motion | Connie Wells |
| 5 | Angular Momentum | Paul Lulai |
| 6 | Standing Waves | Jeff Funkhouser |
| 7 | Conservation of Charge and Energy in Circuits | Angela Jensvold |
| 8 | Electrostatic Fields | Robert Morse |
| 9 | Gravitational and Electric Potentials | Marc Reif |
| 10 | Electromagnetic Induction | Deborah Roudebush |
| 11 | Thermodynamics | James Lincoln |
| 12 | Pressure, Force, and Flow in Fluids | Gardner Friedlander, Brad Davis |
| 13 | Diffraction and Interference | Rebecca Howell |
| 14 | Atomic Transitions | Deborah Ormond |

# Unit Design and Grading

Each unit has 4 major components.

1. **Introduction** You will be introduced to the concept and the instructor(s). All instructors have significant experience with the AP Macroeconomics program.
2. **Let’s See What You Already Know (5%)** Pre-assessment questions that test concepts that you should know in order to continue with the unit. These questions were not meant for teaching purposes and as such have no explanation with the answer.
3. **Learning cycles (70%)** Each learning cycle contains a short video explanation of the concept, a hands-on activity that allows you to practice the concept, and formative assessment questions that include feedback. You can self-assess and teachers can also receive feedback about your understanding.
   1. **Module Introduction:** You will be introduced to the concept and instructor, learning objectives, and a list of important vocabulary.
   2. **Video Content:** An experienced AP Macroeconomics instructor explains the concept in the learning cycle.
   3. **Activity:**The hands-on activities aim to merge innovative teaching technology with AP focused content. In many cases, we are pushing the boundaries of assessment within the edX platform. Because of the novelty of many of our assessment techniques, these are not always strictly graded, however, we do expect you to take these activities seriously.
   4. **Formative Assessment Questions:** Formative assessment questions include feedback for you. You can self-assess and teachers can also receive feedback about your understanding.
4. **Let’s See What You’ve Learned (15%)** Post-assessment questions cover the information from the unit. These questions also contain feedback for you to help you better understand the concepts. This feedback includes where to look in the unit for the information tested in each question.

*There is no final exam for this course.*