



## Transfer Model Curriculum Template for Physics 2.0 – CSU and UC

**Approval Dates: May 13, 2011; December 4, 2012; November 8, 2023; January 30, 2025**

**CCC Associate Degree for Transfer Major or Area of Emphasis:** Physics

**CSU and UC Majors deemed similar:** Physics, Physics Education

**Degree Type:** AS-T

**Total Minimum Semester Units for Major or Area of Emphasis:** 32-33

*This is **proposed** as a high-unit STEM major that prepares students for transfer to both the CSU and UC. **Exception to 60-unit requirement by AB 928:** 6 additional units for the ADT. Supporting evidence and rationale is required.*

### COURSES

#### Required Core

Title	C-ID Designation or other Justification	C-ID Units (or sample units)	Proposed Cal-GETC Area for double counting
Calculus-based Physics for Scientists and Engineers: ABC (12) <b>OR</b> Calculus-based Physics for Scientists and Engineers: A <b>and</b> Calculus-based Physics for Scientists and Engineers: B <b>and</b> Calculus-based Physics for Scientists and Engineers: C <b>and</b>	PHYS 200S  PHYS 205  <i>and</i> PHYS 210  <i>and</i> PHYS 215	12 (15)  4 (5)  4 (5)  4 (5)	5A/C  5A/C  5A/C  5A/C
Single Variable Calculus Sequence <b>and</b> Multivariable Calculus <b>OR</b> Single Variable Calculus I – Early Transcendentals <b>and</b> Single Variable Calculus II – Early Transcendentals <b>and</b> Multivariable Calculus <b>OR</b> Single Variable Calculus I – Late Transcendentals <b>and</b> Single Variable Calculus II – Late Transcendentals <b>and</b> Multivariable Calculus	MATH 900S MATH 230 MATH 210  MATH 220  MATH 230 MATH 211 MATH 221  MATH 230	8 4 4  4  4 4 4  4	2 2 2  2  2 2 2  2
Ordinary Differential Equations <b>and</b> Linear Algebra <b>OR</b> Differential Equations and Linear Algebra	MATH 240 MATH 250 MATH 910-S	3 3 5	2 2 2
Programming Concepts and Methodology I <b>OR</b> Any Introductory Programming Course such as C++, Python, and such that is articulated for transfer for the major	COMP 122 AAM	3	

<b>TOTAL MAJOR UNITS</b>	<b>32-33</b>
Cal-GETC Requirements	34
Double Counting GE	-7
Elective	-
<b>Total Units</b>	<b>60-66*</b>

*\* All units are based on the semester and indicated minimum units. The major must be a minimum of 18 semester units.*

**\*Please note that colleges are permitted to use up to six additional units, but no additional local requirements can be added to this degree. Students are only to be required to complete the full Cal-GETC pattern and the core courses listed in the TMC.**

## **NOTES: RECOMMENDATIONS AND CONSIDERATIONS**

1. **Require both Differential Equations and Linear Algebra.** All UC campuses and most CSU campuses require both. In addition, CSU faculty shared that this would better prepare students for transfer.
2. **Removal of one semester of General Chemistry.** The one semester of general chemistry was removed because it was not required by all CSU campuses and many community colleges indicated that they would need a modification of Cal-GETC Area 5 (allow two physical science courses instead of one physical science and one biological science) and the six additional units from AB928 to implement the degree locally.
3. **Recommend an exception to the 60-unit maximum to permit a 66-unit maximum for the Physics ADT and/or completion of Cal-GETC after transfer.** The units required for the major (with the removal of the first semester of General Chemistry) has been reduced to 32-33. With 7 units of double counting, the required units, based on the minimum units listed in the C-ID descriptors, would be 59-60. More than 30% of the colleges completing the survey for this TMC (that currently have ADTs in Physics) indicated that they would be unable to implement this new TMC locally because of 5 unit physics/math courses. For colleges with 5 unit physics courses, the major becomes 35-36 units. This would move the local degrees to 62-63 units and those degrees would not be possible if the TMC is approved at 60 units.

Respondents were asked if adding six additional units would allow them to implement the TMC locally. 80% of respondents indicated that six additional units would make the degree possible for them.

To ensure the number of Physics ADT options at community college campuses does not decrease, it is requested that the 6 additional units outlined in AB928 are allowed for colleges implementing this degree program.