ADT Submission Form for Physics 2.0
CCC Major or Area of Emphasis: Physics
TOP Code: 1902.00
CSU and UC Major(s): Physics; Physics Education
Total Units: 32-33 *(all units are minimum semester units)*

In the four columns to the right under the **College Program Requirements**, enter the college's course identifier, title and the number of units comparable to the course indicated for the form. If the course may be double-counted with Cal-GETC, enter the GE Area to which the course is articulated. To review the GE Areas and associated unit requirements, please go to Chancellor's Office Academic Affairs page, RESOURCE section located at: https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Educational-Services-and-Support/What-we-do/Curriculum-and- Instruction-Unit/Templates-For-Approved-Transfer-Model-Curriculum

or the ASSIST website: https://www.assist.org/.

The units indicated in the template are the **minimum** semester units required for the prescribed course or list. All courses must be CSU and UC transferable. ***All courses with an identified C-ID Descriptor must be submitted to C-ID prior to submission of the Associate Degree for Transfer (ADT) proposal to the Chancellor's Office.***

Where no **C-ID Descriptor** is indicated, discipline faculty should compare their existing course to the example course(s) provided in the form at:

http://www.c-id.net/degreereview.html

Attach the appropriate ASSIST documentation as follows:

- *Articulation Agreement by Major* (***AAM***) demonstrating lower division preparation in the major at a CSU or UC;
- *UC Transfer Course Agreement* (***UCTCA***) for the transfer courses; and/or,
- *Cal-GETC Certification Course List by Area* (***GECC***).

The acronyms ***AAM, UCTCA,*** and ***GECC*** will appear in **C-ID Descriptor** column directly next to the course to indicate which report will need to be attached to the proposal to support the course's inclusion in the transfer degree. To access ASSIST, please go to http://www.assist.org.

Associate in Science in Physics 2.0 for Transfer Degree
College Name: MOORPARK COLLEGE

TRANSFER MODEL CURRICULUM (TMC)		COLLEGE PROGRAM REQUIREMENTS			
Course Title (units)	**C-ID Descriptor**	**Course ID**	**Course Title**	**Units**	**Cal-GETC**
REQUIRED CORE: (32-33 units)					
Calculus-based Physics for Scientists and Engineers: ABC (12)	PHYS 200S	PHYS M20A AND PHYS M20AL AND PHYS M20B AND PHYS M20BL AND PHYS M20C AND PHYS M20CL	Mechanics of Solids and Fluids AND Mechanics of Solids and Fluids Lab AND Thermodynamics, Electricity and Magnetism AND Thermodynamics, Electricity and Magnetism Lab AND Electricity Wave Motion, Optics and Modern Physics AND Wave Motion, Optics and Modern Physics Lab	4 1 4 1 4 1	5A 5C 5A 5C 5A 5C
OR	**OR**				
Calculus-based Physics for Scientists and Engineers: A (4)	PHYS 205				
AND	**AND**				
Calculus-based Physics for Scientists and Engineers: B (4)	PHYS 210				
AND	**AND**				
Calculus-based Physics for Scientists and Engineers: C (4)	PHYS 215				

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TRANSFER MODEL CURRICULUM (TMC)		COLLEGE PROGRAM REQUIREMENTS			
Course Title (units)	**C-ID Descriptor**	**Course ID**	**Course Title**	**Units**	**Cal-GETC**
Single Variable Calculus Sequence (8) **OR** Single Variable Calculus I – Early Transcendentals (4) **AND** Single Variable Calculus II – Early Transcendentals (4) **OR** Single Variable Calculus I – Late Transcendentals (4) **AND** Single Variable Calculus II – Late Transcendentals (4)	MATH 900S **OR** MATH 210 **AND** MATH 220 **OR** MATH 211 **AND** MATH 221	MATH M25A OR MATH M25AH AND MATH M25B OR MATH M25BH	Calculus with Analytic Geometry I OR Honors: Calculus with Analytic Geometry I AND Calculus with Analytic Geometry II OR Honors: Calculus with Analytic Geometry II	5 5 5 5	2 2 2 2
Multivariable Calculus (4)	MATH 230	MATH M25C	Calculus with Analytic Geometry III	5	2
Ordinary Differential Equations (3) **AND** Introduction to Linear Algebra (3) **OR** Differential Equations and Linear Algebra (5)	MATH 240 **AND** MATH 250 **OR** MATH 910S	MATH M35 AND MATH M31	Applied Differential Equations AND Introduction to Linear Algebra	3 3	2 2
Programming Concepts and Methodologies I (3) **OR** Any Introductory Programming Course such as C++, Python, and such that is articulated for transfer for the major	COMP 122 **OR** *AAM*	CS M125	Programming Concepts and Methodology I	3	

Total Units for the Major:	32-33

Total Units for the Major:	39	
Total Units that may be double-counted (*The transfer GE Area limits must not be exceeded*)		7
General Education (Cal-GETC) Units		**34**
Elective (CSU Transferable) Units		0
Total Degree Units (maximum)		**66**

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.
*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.

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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 may 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. Require one introductory programming course. All UC campuses and most CSU campuses require programming. There were concerns that if students waited to take a programming course after transfer that it may create an equity issue between students that start at the four-year institution as freshmen and those that transfer. However, if units are really an issue, then this would be the course that could be taken after transfer.
4. 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 TIMC is approved at 60 units.
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.