First Semester College Physics
(Physics 101 or equivalent)

Prerequisite – Either Trigonometry/3rd year Algebraic functions taken as pre- or co-requisite.

Required Supporting Documents – The following documentation must be included with the transfer request:

- Course Syllabus (include both course number and course name)
- Lab Syllabus
- Examples of Assessment – Comprehensive final **or** up to 5 examples of course assessment including tests and quizzes. The example assessments should be representative of the way conceptual understanding and mathematics is integrated into the class.
- Description of Mathematics Expectations – As part of the Learning Outcomes or as a separate section detail the types of mathematical calculations the students are expected to perform.

Description: Students learn introductory principles of physics using algebra and vector notation. The course covers kinematics and dynamics in one and two dimensions, including linear and rotational motion; Newton's three laws of motion; Newton's law of gravitation; energy and momentum; conservation laws for energy, momentum, and angular momentum and equilibrium; periodic motion. Topics of fluid mechanics; wave motion and sound; and basic thermodynamics may be covered but are not required for transferability. This class is appropriate for students in various algebra-based disciplines and disciplines such as engineering technologies that provide their own calculus-based support.

Student Assessment: Students completing a transferable course are expected to have demonstrated both a conceptual/qualitative understanding of the above topics and a quantitative capability to solve problems utilizing principles from these topics. This understanding and capability must be demonstrated by solving problems which contain elements both familiar and unfamiliar to the student and which require the student to utilize his understanding of these principles (as opposed to simply memorizing given scenarios and procedures). This includes carefully reading the problem, converting the problem statement to an appropriate representation including pictures/graphs and the appropriate mathematical variables and relationships, and answering specified questions using proper logical, algebraic and trigonometric procedures. It is also expected that students have obtained significant experience in the solution of problems which require solving multiple parts together with multiple concepts. Students are also expected to develop and demonstrate a facility with hands-on laboratory work that employs these principles and procedures.

Time-on-Task: The transferable course is expected to meet for at least five face-to-face hours per week with six face-to-face hours suggested. Of this time, two or more of the hours must meet in the laboratory setting. Students are expected to complete hands on activities and experiments in the laboratory setting. The students are also expected to complete substantial out-of-class work in the form of homework (or equivalent) to develop qualitative and quantitative reasoning and problem solving skills beyond the in-class learning experience.

Textbook: The material should be taught from a text similar to Sears & Zemansky's College Physics (8th Edition) by Young and Geller or Physics: Principles with Applications by Giancoli (6^{th} Edition). Many other texts are appropriate; the primary attribute of an equivalent text is the coverage of the material with an integrated use of algebra, trigonometry and vector notation.

Coverage: To meet the 70% alignment all topics with (*) must be covered. The other topics may be covered but are not required for transferability.

MECHANICS (Young & Geller (8th Edition) Table of Contents)

Learning Goals:

1. To develop a qualitative understanding of motion (linear and rotational), forces, laws of conservation; and to be able to apply this understanding to real-world settings.

2. To develop analytical reasoning and quantitative problem solving skills that allow the analysis (using vector notation, trigonometry and algebra) of physical systems in motion or in equilibrium. Students should be able to analyze systems experiencing changing forces in one and two dimensions. This includes carefully reading the problem, converting the problem statement to an appropriate representation including pictures/graphs and the appropriate mathematical variables and relationships, and answering specified questions using proper logical, algebraic and trigonometric procedures.

3. To use laboratory equipment to explore the behavior of physical systems. The students should be able to perform experiments that investigate the qualitative behavior of systems and experiments that collect numerical data. From numerical data, students should be able to quantitatively analyze the data to demonstrate physical principles, extract physical parameters, test models, and refine models. The students should understand the role of error in experimentation and be able to assess that error.

Template for Course Inventory

Please fill out the following table and submit attachment(s). Approved courses must be resubmitted every 5 years. Please resubmit before the 5 year renewal if substantial revisions are made to the course.
Please attach the following materials:

- Current working syllabus and lab syllabus that contains instructional goals and/or objectives
- Comprehensive final; in the absence of a comprehensive final no more than 5 sample assessments (student exercises, quizzes, exams, or other assessments).

Course #			
Course Title			
Beginning Term (when is/was it first offered?)	If more than five years, check box ☐		
	If less than five years, enter date:		
Credit Hours (including the entire course, lecture/lab)	Lecture:		
	Lab:		
Co-/Pre-requisite (test scores for placement)		Test	Score
	Pre-req:		
	Co-req:		
Successor Course:			
Catalog Description			
All Textbook(s)/Lab Manual	ISBN: Title: Publisher: Author: Edition: Copyright Year:	ISBN: Title: Publisher: Author: Edition: Copyright Year:	

Indicate the typical percentage of time spent on each learning outcome/topic	**Learning Objective**	**% Time**
	1. *Models, Measurements, and Vectors	
	2. *Motion Along a Straight Line	
	3. *Motion in A Plane	
	4. *Newton's Laws of Motion	
	5. *Applications of Newton's Laws	
	6. *Circular Motion and Gravitation	
	7. *Work and Energy	
	8. *Momentum	
	9. *Rotational Motion	
	10. *Dynamics of Rotational Motion	
	11. *Elasticity and Periodic Motion.	
Non-essential topics (may not be covered at all)	12. Mechanical Waves and Sound	
	13. Fluid Mechanics	
	14. Temperature and Heat	
	15. Thermal Properties of Matter	
	16. The Second Law of Thermodynamics	

Name of individual submitting:_____

Email address:_____

Please contact Beez Schell, beez.schell@wvhepc.edu, Academic Affairs with questions