THREE RIVERS COMMUNITY COLLEGE COURSE OUTLINE

Course Number/Title: PHY K114 Physics (Mechanics) Lab	
Lecture <u>0 hrs</u> Laboratory <u>0 hrs</u> Credit <u>0 hrs</u> Contact <u>2 hrs</u>	
Course Description: To Study Practical Applications of Classical Newtonian Physics.	
Method: Lab	
Text: <u>Handouts</u>	
Prerequisites:Co-Requisites:PHY-K114_Lecture	
COURSE TOPICS/CONTENT	
HOUR A. Introduction, Number System, Accuracy, Precision, Unit Conversions, Unit Analysis, Rounding 2	
B. Measurement, Density, Vernier Caliper, Micrometer, Volume 2	
C. Vectors, Resultant, Equilibrium, Force Table 2	
D. Rolling Ball, Changing Velocity, Non-Constant Acceleration Graphing, Slopes of Graphs, Curve Fitting 2	
E. Falling Apple, Newton's Experiment of Falling Objects 2	
F. Falling Mass, Photogate Measurement of Falling Objects 2	
G. Horizontal Acceleration, Air Tracks, Sliders, F=ma Proof 2	
H. Atwood Machine, Vertical Acceleration, F=ma Proof 2	
I. Projectile Motion, Horizontal / Vertical Velocity Relations 2	
J. Friction, Static, Dynamic, Leather on Steel 2	
K. Pendulum, "g" Calculation of Swinging Pendulum 2	
L. Non-Concurrent Forces, Equilibrium, Moments, Rotation 2	
M. Energy, Potential, Kinetic, Joules, Balance, Law of Energy 2	
N. Cart on Inclined Plane, Equilibrium, Concurrent forces 2	
O. Open Lab for Course Wrap-up 2	
Date: October 13, 2010 TOTAL HOURS 30	
Prepared By: Robert Lantz	

Program Coordinator: <u>Robert Niedbala</u>

Department Chairperson: <u>*Tony Benoit*</u>

Continuation Sheet No 2 of 2

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Measurable Objectives

THE STUDENT WILL:

- 1. Be able to understand Units, Accuracy and Precision of Instruments.
- 2. Be able to calculate variables using equations and to Express answers with reasonable accuracy.
- 3. Be able to calculate the Resultant of several Vectors And to relate Resultant to Equilibrium requirements.
- Be able to Graph distance vs time and relate slope to the instantaneous velocity.
- 5. Be able to Graph Velocity vs time and relate slope to the Instantaneous acceleration
- Be able to use derived equations of constant acceleration to determine distance, time, velocity and acceleration relationships.
- 7. Be able to analyze free body diagrams to determine resultant Force, and its relationship to the mass and acceleration.
- 8. Be able to analyze objects in projectile flight to understand how horizontal velocity relates to vertical velocity.
- 9. Be able to understand friction and how it relates to the normal force acting on the body.
- 10. Be able to understand "g" and how it relates to the planet.
- 11. Be able to use energy in practical terms with units of Joules.