UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program   : MIPA/Science Education

Course/Code   : Basic Physics I/SSC207

Credits   : Theory = 3 units; Labwork = 0

Semester/Duration   : I/ 1 x 50 minutes

Basic Competence   : Students are able to apply Mathematical Concepts (dimensional analysis, trigonometry, scalars & vectors) in the physical problems

Indicators   : The Students will have a basic understanding of accuracy and precision in measurement, and of how to reflect these ideas in reported values; of dimensional analysis and the correct reporting of units of measurement; and of some units and prefixes of the SI system

Topic   : Introduction & Mathematical Concepts

Course activity   :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction. The student will become familiar with using the standard SI system used in scientific measurements.	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	A. Chapter 1.1-1.10, 3.1-3.3,2.1-2.5
Main	Discuss rules in Mathematical Concepts (dimensional analysis, trigonometry, scalars & vectors) in the physical problems	60' 60'			
Closing	Review	10'			Chap 1: 6,21,39
Follow-up	Homework	10'			Chap 3: 1,11,19

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA

FAKULTAS MIPA

LESSON PLAN

Faculty/Program   : MIPA/Science Education

Course/Code   : Basic Physics I/SSC207

Credits   : Theory = 2 units; Labwork = 0

Semester/Duration : I/ 1 x 50 minutes

Basic Competence : The Students will have a basic understanding of displacement, speed & velocity, acceleration, kinematics, freely falling bodies

Indicators   : The student will become familiar with using the Mathematical Concepts (dimensional analysis, trigonometry, scalars & vectors) to describe real-world applications of motion in one dimension

Topic   : Motion in one dimension

Course activity   :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss to understanding of the mathematical concepts to describe real-world application of motion in one dimension	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	A. Chapter 1.1-1.10, 3.1-3.3,2.1-2.5
Main	Discuss to understand and solve basic problems of Motion in One Dimension Displacement, speed & velocity, acceleration, kinematics, freely falling bodies	60' 60'			
					Chap 1: 6,21,39 Chap 3: 1,11,19
Closing	Review	10'			
Follow-up	Homework	10'			

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program : MIPA/Science Education

Course/Code : Basic Physics I/SSC207

Credits : Theory = 2 units; Labwork = 0

Semester/Duration : I/ 1 x 50 minutes

Basic Competence : Students are able to describe the motion of particles moving in two-dimensions

Indicators : The student will become familiar with using the trigonometry and vectors in order to describe real-world applications of motion in two- dimension

Topic : Motion in two dimension

Course activity :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, motion in One Dimension	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will learn to describe the motion of particles moving in one- and two-dimensions and the quantitative relationship between the kinematical parameters that determine the motion.	60' 60'			A.Chapter 2.6-2.7, 3.4-3.6
Closing	Review	10'			A. Chap 2: 7,8,21,28,43 Chap 3: 26,29,30
Follow-up	Homework	10'			

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program   : MIPA/Science Education

Course/Code   : Basic Physics I/SSC207

Credits   : Theory = 2 units; Labwork = 0

Semester/Duration   : I/ 1 x 50 minutes

Basic Competence   : Students are able to Use Newton's laws of motion phenomena in daily life

Indicators   :The student will become familiar with using the laws of motion to understand the dynamics of systems of particles and determine the motion of objects under the influence of various forces

Topic   : The Laws of Motion

Course activity   :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, motion in two Dimension	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will Use Newton's laws of motion to understand the dynamics of systems of particles and determine the motion of objects under the influence of various forces. The subject of statics will also be studied in the context of Newton's Laws	60' 60'			A.Chapter 4.1-4.6 A. Chap 4: 12,17,34,35,38
Closing	Review	10'			
Follow-up	Homework	10'			

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program : MIPA/Science Education

Course/Code : Basic Physics I/SSC207

Credits : Theory = 2 units; Labwork = 0

Semester/Duration : I/ 1 x 50 minutes

Basic Competence : Students are able to examine the relationship between the work done by an object and it's change in motion

Indicators :The student will become familiar with using the work done by an object and it's change in motion or position in order to apply the conservation of energy to moving particle systems

Topic : Work and Energy

Course activity :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, Newton's laws of motion and gravitation	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will examine the relationship between the work done by an object and it's change in motion or position in order to apply the conservation of energy to moving particle systems. The relationship between potential and kinetic energy is emphasized.	60' / 60'			A.Chapter 5.1-5.8
Closing / Follow-up	Review / Homework	10' / 10'			A. Chap 5: 1,4,17,27,31,46, 50

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program   : MIPA/Science Education

Course/Code   : Basic Physics I/SSC207

Credits   : Theory = 2 units; Labwork = 0

Semester/Duration   : I/ 1 x 50 minutes

Basic Competence   : Students are able to look at different types of collisions

Indicators   :The student will become familiar with using the collisions between objects in terms of the conservation of momentum and the impulses imparted to particles subjected to an external force

Topic   : Momentum and Collisions

Course activity   :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, Work and energy	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will look at different types of collisions between objects in terms of the conservation of momentum and the impulses imparted to particles subjected to an external force.	60' 60'			A.Chapter 6.1-6.4 A. Chap 6: 5,16,22,36,41
Closing	Review	10'			
Follow-up	Homework	10'			

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program   : MIPA/Science Education

Course/Code   : Basic Physics I/SSC207

Credits   : Theory = 2 units; Labwork = 0

Semester/Duration   : I/ 2 x 50 minutes

Basic Competence   : Students are able to use Newton's laws of Circular Motion in daily life

Indicators   :The student will become familiar with using the laws of motion to understand the dynamics of systems of particles and determine the motion of objects under the influence of various forces

Topic   : Circular Motion

Course activity   :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, Newton's law of motion	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will Describe the circular motion and the gravitation to understand the dynamics of systems of particles and determine the motion of objects under the influence of various forces.	60' 60'			A.Chapter 7.1-7.9
Closing Follow-up	Review Homework	10' 10'			A. Chap 7: 5,17,21,25,35

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program : MIPA/Science Education

Course/Code : Basic Physics I/SSC207

Credits : Theory = 2 units; Labwork = 0

Semester/Duration : I/ 1 x 50 minutes

Basic Competence : Students are able to use the laws of gravitation in daily life

Indicators :The student will become familiar with using the the laws of gravitation to understand the dynamics of systems of particles and determine the motion of objects under the influence of various forces.

Topic : The law of gravitation

Course activity :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, Newton's law of motion	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will Describe the the laws of gravitation to understand the dynamics of systems of particles and determine the motion of objects under the influence of various forces.	60' 60'			A.Chapter 7.1-7.9
Closing Follow-up	Review Homework	10' 10'			A. Chap 7: 5,17,21,25,35

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program	: MIPA/Science Education
Course/Code	: Basic Physics I/SSC207
Credits	: Theory = 2 units; Labwork = 0
Semester/Duration	: I/ 1 x 50 minutes
Basic Competence	: Students are able to use rotational equilibrium and rotational dynamics motion of rigid bodies
Indicators	:The student will become familiar with using the rotational equilibrium and rotational dynamics in the context of Newton's Laws
Topic	: Rotational Equilibrium and Rotational Dynamics
Course activity	:

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, Circular Motion	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will Describe the rotational equilibrium and rotational dynamics motion of rigid bodies by treating them as a collection of rotating masses subject to external torques and positional changes. The subject of statics will also be studied in the context of Newton's Laws	60' 60'			A.Chapter 8.1-8.7
Closing	Review	10'			A. Chap 8: 1,6,9,18,29,30, 1,44,50
Follow-up	Homework	10'			

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program   : MIPA/Science Education

Course/Code   : Basic Physics I/SSC207

Credits   : Theory = 2 units; Labwork = 0

Semester/Duration   : I/ 1 x 50 minutes

Basic Competence   : Students are able to use Archimedes' principle fluids in motion, equation of continuity and Berneolli's equation

Indicators   : The student will become familiar with using the Archimedes' principle fluids in motion, equation of continuity and Berneolli's equation

Topic   : Solids and Fluids

Course activity   :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, characteristic of fluids	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will understands Archimedes' principle fluids in motion of any object completely or partially submerged in a fluid is buoyed up by a force whose magnitude is equal to the weight of the fluid displaced by the object.	60' 60'			A.Chapter 9.1-9.8
Closing Follow-up	Review Homework	10' 10'			A. Chap 9: 14,18,19,27

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program   : MIPA/Science Education

Course/Code   : Basic Physics I/SSC207

Credits   : Theory = 2 units; Labwork = 0

Semester/Duration   : I/ 1 x 50 minutes

Basic Competence   : The student will look at the effect of temperature on the internal energy

Indicators   :The student will understand the effect of heat; temperature, thermal expansion, ideal gas, specific heat, and phase transitions

Topic   : Thermal Physics, Heat

Course activity   :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, motion in two Dimension	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will look at the effect of temperature on the internal energy of large collections of particles and the macroscopic quantities that describe distributions of matter. The student will understand the effect of heat; temperature, thermal expansion, ideal gas, specific heat, and phase transitions	60' 60'			A.Chapter 10.1-10.6, 11.1-11.7
Closing Follow-up	Review Homework	10' 10'			A. Chap 10: 1,11,28,35,36,41 Chap 11: 2,7,13

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program   : MIPA/Science Education

Course/Code   : Basic Physics I/SSC207

Credits   : Theory = 2 units; Labwork = 0

Semester/Duration   : I/ 1 x 50 minutes

Basic Competence   : Students are able to use the Laws of Thermodynamics in daily life

Indicators   :The student will become familiar with using the laws of of Thermodynamics; Heat and internal energy, work and heat, heat engines,the Carnot Engine, and etropy

Topic   : The Laws of Thermodynamics

Course activity   :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, motion in two Dimension	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will use laws of thermodynamics to understand the heat and internal energy, work and heat, heat engines, the Carnot Engine, and etropy	60' 60'			A.Chapter 12.1-12.8
Closing	Review	10'			A. Chap 11: 20,26,34,44 Chap 12: 7,15,28,36
Follow-up	Homework	10'			

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program : MIPA/Science Education

Course/Code : Basic Physics I/SSC207

Credits : Theory = 2 units; Labwork = 0

Semester/Duration : I/ 1 x 50 minutes

Basic Competence : Students are able to apply vibration and waves theory in daily life problems

Indicators :The student will become familiar with using the harmonic vibration equation, and wave equation to undestand physical phenomena in the natural science

Topic : Vibration and Waves

Course activity :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, Newton's law of motion	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will Use harmonic vibration equation, and wave equation to undestand physical phenomena in the natural science	60' 60'			A.Chapter 13.1-13.13
Closing	Review	10'			A. Chap 13: 1,15,22,33,37,38, 40,45
Follow-up	Homework	10'			

Yogyakarta, 16 August 2010

Lecturer

UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS MIPA

LESSON PLAN

Faculty/Program : MIPA/Scienc Education

Course/Code : Basic Physics I/SSC207

Credits : Theory = 2 units; Labwork = 0

Semester/Duration : I/ 1 x 50 minutes

Basic Competence : Students are able to understand concept of sound waves, doppler effect, and standing waves

Indicators : The student will become familiar with using the laws of motion to understand the dynamics of systems of particles and determine the motion of objects under the influence of various forces

Topic : Sound

Course activity :

Step	Detailed Activity	Duration	Method	Media	Reference
Intro	Discuss the Introduction, Vibration and wave	10'	Problem-solving exam, lab participation, cumulative final	Whiteboard, Powerpoint	
Main	The student will discuss rules in concept of Speed of Sound Waves Periodic Sound Waves Intensity of Periodic Sound Waves The Doppler Effect Digital Sound Recording Motion Picture Sound	60' 60'			A.Chapter 14.1-14.10 A. Chap 14: 4,25,36,45,47
Closing	Review	10'			
Follow-up	Homework	10'			

Yogyakarta, 16 August 2010

Lecturer