



eGrade Plus



Student Learning Guide

Overview

Welcome to **eGrade Plus**, an exciting new way to study and learn physics!

eGrade Plus is a combination of an on-line, interactive version of *PHYSICS, 6th ed.* by Cutnell and Johnson and the **eGrade** homework management system.

The on-line textbook provides an extensive set of problem-solving help -- all just an easy click away!

Here's what you get:

- The entire textbook in a hypertext format with over 10,000 links.
- The complete Student Study Guide and complete Student Solutions Manual fully linked.
- The Interactive LearningWare problem-solving tutorial program.
- Over 100 interactive simulations.

eGrade

The **eGrade** system provides a variety of assignments based on your textbook's problems. All assignments offer immediate feedback, and include links directly back to the location in your textbook where the concepts used in the problems are addressed. You can use **eGrade** to assess your own progress.

eGrade is also available to your instructor as tool for assigning, collecting, and grading homework or quizzes.

When you register in an **eGrade Plus** class, the system sets up a student account for you that is available around the clock and accessible from any web access point.

eGrade Plus uses end-of-chapter problems from your textbook as the basis for assignments. Once assignments are created, you select and complete them, then submit them to the system for automatic scoring.

Getting Started

The URL for the *eGrade Plus* will be given to you by your instructor. We recommend that you bookmark this page for easy access throughout the term.

When you access the *eGrade Plus* URL for the first time, you will be asked to register.

Click on “Register ” and follow these steps:

1. Enter the 18-digit alphanumeric registration code exactly as it appears on the inside front cover of this manual. Once you enter this registration code, it cannot be reused. At this time you will create a profile with a personal Username and Password that you will use to login during each visit to the site thereafter.

2. After initial registration, the system will prompt you to enter your Username and Password. Be sure to keep your account access information private from your fellow classmates. Logging in under someone else's account is considered fraudulent behavior, subject to the academic policies and penalties of your individual institution.
3. Once you've logged on, you will be returned to the Homepage where you will have a choice of accessing the on-line text, doing practice quizzes, doing an *eGrade Plus* assignment, or checking your grades.

Homepage

Each class homepage is personalized by your instructor.

Check here for class announcements

At your class homepage you will be able to access all the resources for your course. You can receive announcements, read text material, and do assignments.

UNI student - Microsoft Internet Explorer

Cutnell & Johnson Physics, Sixth Edition
Southern Illinois Univ. -- Ken Johnson -- Physics 210

Suzie Smith Logout

Home My Profile Help

Study & Practice Assignment Gradebook

Welcome

Welcome to the Home page for Cutnell & Johnson Physics, Sixth Edition. You are currently registered in the class of Ken Johnson.

Assignment

Due this week

Chapter 10 Default Assignment Due Date 06.07.2003 at 12 PM

Homework 1 Due Date 06.06.2003 at 12 PM

Reading Assignment #3 Unlimited

Study & Practice

Choose a chapter ... [More info...](#)

Read or interact with any resources in the course.

1: Introduction and Mathematical Concepts

View Resources

System Messages Announcements Additional Information Documents

Local Disk (C:) Privacy Policy © 2000-2003 John Wiley & Sons, Inc. All Rights Reserved. A Division of John Wiley & Sons, Inc.

Start Internet 2:41 PM

Study and Practice

Choose a chapter from the drop down menu and click on “View Resource List.” Now using the Resource List, you can go directly to any section of the text. Let’s go to Section 6.3. Your screen should now look like this:

UNI player - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Cutnell & Johnson Physics, Sixth Edition
Southern Illinois Univ. -- Ken Johnson -- Physics 210

WILEY

Suzie Smith Logout Back To Study & Practice Home

Work and Energy

6.1. Work Done by a Car

6.2. The Work-Energy Theorem

6.3. Gravitational Potential Energy

6.4. Conservative versus Nonconservative Forces

6.5. The Conservation of Mechanical Energy

6.6. Power

6.7. Other Forms of Energy

6.8. Work Done by a Variable Force

6.9. Work Done by a Variable Force

6.10. Concepts & Calculations

6.11. Concept Summary

6.12. Conceptual Questions

6.13. Problems

6.14. Additional Problems

6.15. Concepts & Calculations

6.3. Gravitational Potential Energy

WORK DONE BY THE FORCE OF GRAVITY

The gravitational force is a well-known force that can do positive or negative work, and Figure 6.10 helps to show how the work can be determined. This drawing depicts a basketball of mass m moving vertically downward, the force of gravity mg being the only force acting on the ball. The initial height of the ball is h_0 , and the final height is h_f , both distances measured from the earth's surface. The displacement s is downward and has a magnitude of $s = h_0 - h_f$. To calculate the work W_{gravity} done on the ball by the force of gravity, we use $W = (F \cos \theta)s$ with $F = mg$ and $\theta = 0^\circ$, since the force and displacement are in the same direction:

$$W_{\text{gravity}} = (mg \cos 0^\circ)(h_0 - h_f) = mg(h_0 - h_f) \quad (6.4)$$

Equation 6.4 is valid for *any path* taken between the initial and final heights, and not just for the straight-down path shown in Figure 6.10. For example, the same expression can be derived for both paths shown in Figure 6.11. Thus, only the *difference in vertical distances* ($h_0 - h_f$) need be considered when calculating the work done by gravity. Since the difference in the vertical distances is the same for each path in the drawing, the work done by gravity is the same in each case. We are assuming here that the difference in heights is small compared to the radius of the earth, so that the magnitude g of the acceleration due to gravity is the same at every height. Moreover, for positions close to the earth's surface, we can use the value of $g = 9.80 \text{ m/s}^2$.

Figure 6.10 Gravity exerts a force mg on the basketball. Work is done by the gravitational force as the basketball falls from a height of h_0 to a height of h_f .

Hyperlinks

A very important feature of the Reading Content is the extensive number of hyperlinks. Hyperlinks allow you to move around quickly in the text without having to turn pages. For instance, if you want to refresh your memory on what gravity is, just click on the word “gravity” highlighted in green. This will take you to the place in the text where gravity is discussed in detail.

Problem-Solving Help

The real power of the hyperlinks can best be demonstrated by looking at the end-of-chapter problems. To see this, go back to the Resource List by clicking “Back to Study & Practice” on the top right hand side of the screen. Click on Section 6.13 Problems. Your screen should now look like this:

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The screenshot shows a web browser window displaying a physics problem page. The page title is "Cutnell & Johnson Physics" and the author is "Suzie Smith". The page content includes a table of contents on the left, a main text area with a problem statement, and two diagrams labeled (a) Dive and (b) Climb. Diagram (a) shows a plane diving at a 75-degree angle to the horizontal, with forces L (lift), T (thrust), and W (weight) acting on it. Diagram (b) shows a plane climbing at an 11.5-degree angle to the horizontal, with forces L, T, and W acting on it. The problem statement asks for the net work done during the dive and climb, and the difference between them.

Click on the SSM icon to see a worked solution

Click on the Interactive Learning Ware link to do an example problem

Every problem has one or more links to problem-solving help, such as the “Student Solution Manual” (SSM) and “Interactive Learning Ware” links shown above. Let’s take a look at some of the problem solving help you can use.

Go back to the Resource List by clicking “Back to Study & Practice” on the top right hand side of the screen. After the reading content, which is the main text material, you will see other resources listed for that chapter. They include material from the Study Guide, Interactive Solutions, Interactive Learningware,

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Concept Simulations, Web Links, and Self Assessment Tests (SAT's).

Click on section from the Study Guide.

UNI player - Microsoft Internet Explorer

Address: http://194.84.98.76:19080/uni/player/index.uni?chapter=tm2197&module=tm2215&page=tm2217

Outsell Johnson **Physics** Southern Illinois Univ. -- Ken Johnson -- Physics 210

Suzie Smith WILEY Student Study Guide

Chapter Summary
 6.1. Work Done by a Constant Force
 6.2. The Work-Energy Theorem
 6.3. Gravitational Potential Energy
 6.5. The Conservation of Mechanical Energy
 6.7. Power
 6.8. Work Done by a Variable Force
 PRACTICE PROBLEMS

6.1. Work Done by a Constant Force

Example 3

A $2.40 \times 10^2 \text{ N}$ force is pulling an 85.0 kg block across a horizontal surface. The force acts at an angle of 20.0° above the surface. The coefficient of kinetic friction is 0.200 , and the block moves a distance of 8.00 m . Find (a) the work done by the pulling force, (b) the work done by the kinetic frictional force, (c) the total work done by all the forces.

a. The work done by the pulling force is

$$W_p = (F \cos 20.0^\circ) s$$

$$W_p = (2.40 \times 10^2 \text{ N})(\cos 20.0^\circ)(8.00 \text{ m})$$

$$W_p = +1.80 \times 10^3 \text{ J}$$

b. The magnitude of the frictional force, $F_f = \mu F_N$, acting on the block is found by applying Newton's second law to the free body diagram. In the vertical direction

$$F_N + F \sin 20.0^\circ - mg = 0$$

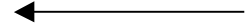
then

$$F_f = \mu(mg - F \sin 20.0^\circ)$$

The work done by this force is

$$W_f = \mu(mg - F \sin 20.0^\circ)(\cos 180^\circ) s$$

References



The key words are highlighted in green here as well

The Study Guide contains a chapter summary, a list of key terms and equations, and a discussion of important sections of the text. There are lots of worked out examples for the important concepts. At the end of each chapter there are practice problems with solutions.

Go back to the Resource List by clicking "Back to Study & Practice" on the top right hand side of the screen. Now click on an Interactive Solution.

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The screenshot shows a Microsoft Internet Explorer window titled "UNI player - Microsoft Internet Explorer". The address bar contains the URL: <http://194.84.96.76:19080/uni/player/index.uni?chapter=tm2197&module=tm2224&page=tm2225>. The page header includes "Cutnell/Johnson Physics" and "Southern Illinois Univ. -- Ken Johnson -- Physics 210". The user is logged in as "Suzie Smith" with a "Logout" link. The page content is titled "Work and Energy" and "6.33. Interactive Solution". A list of other interactive solutions is visible on the left: 6.33, 6.39, 6.51, 6.55, and 6.75. The main problem text reads: "33. A slingshot fires a pebble from the top of a building at a speed of 10.0 m/s. The building is 20.0 m tall. Ignoring air resistance, find the speed with which the pebble strikes the ground when the pebble is fired (a) horizontally, (b) vertically straight up, and (c) vertically straight down." Below the text is an illustration of a person using a slingshot. To the right of the illustration are four buttons: "restart", an up arrow, a down arrow, "quit", and "help". The browser's status bar shows "Done" and "Internet". The Windows taskbar at the bottom shows the Start button and system tray icons, with the time displayed as 4:56 PM.

Interactive Solutions present you with a problem and allow you to give your answer or work through a series of steps to discover the solution. If these exercises pertain to an end of chapter problem in your text the problem will be marked with a purple icon.

Go back to the Resource List by clicking "Back to Study & Practice" on the top right hand side of the screen. Now click on an Interactive Learningware.

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UNI player - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://194.84.98.76:19080/uni/player/index.uni?chapter=kn2197&module=kn2230&page=kn2231

Cutnell Johnson Physics
Southern Illinois Univ. -- Ken Johnson -- Physics 210

Suzie Smith
Interactive Learningware

Back To Study & Practice Home Logout

6.1. Interactive Learningware
6.2. Interactive Learningware
6.3. Interactive Learningware

Work and Energy
6.2. Interactive Learningware

ILW # 6.2

START

In screeching to a halt on a level road, a car leaves skid marks that are 65 m long. The coefficient of kinetic friction between the tires and the road is $\mu_k = 0.71$. How fast was the car going before the driver applied the brakes?

Prior to this chapter, we would have used kinematics in one dimension, Newton's second law of motion, and kinetic friction to solve this problem. But now, we have a new and very powerful tool. It is known as the work-energy theorem. Combining this theorem with the definition of the work done by a constant force, in this case the kinetic frictional force, will enable us to determine the speed of the car just before the brakes were applied.

Visualization
Reasoning
Knowns & Unknowns
Modeling the Problem
Numerical Solution
FINISH

Audio Repeat
Restart
Menu
Quit

Press Any Key To Continue

References

Start Internet 12:29 PM

These interactive calculation examples will help you develop your problem-solving skills. References to these examples are contained in nearly every chapter of the text. Their user-friendly clarity allows you to see how conceptual understanding and quantitative analysis work together in a problem-solving environment.

Go back to the Resource List by clicking “Back to Study & Practice” on the top right hand side of the screen. Now click on Concept Simulations.

You can get different results by changing the controls

This section consists of interactive simulations. Many concepts in physics – such as relative velocities, collisions, and ray tracing – can be better understood when they are simulated. With each simulation you can experiment, because one or more parameters are under user control.

Go back to the Resource List by clicking “Back to Study & Practice” on the top right hand side of the screen. Now click on a Web Link.

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These links, organized by chapter, provide a rich resource of on-line study aids.

Go back to the Resource List by clicking “Back to Study & Practice” on the top right hand side of the screen. Now click on a SAT.

The screenshot shows a web browser window titled "UNI player - Microsoft Internet Explorer". The address bar shows the URL: <http://194.84.96.76:19080/uni/player/index.uni?assignment=1183&agtype=practices&practicemode=preview>. The page header includes "Cutnell-Johnson Physics" and "Southern Illinois Univ. -- Ken Johnson -- Physics 210". The user is identified as "Suzie Smith" with a "Logout" link. The main content area is titled "SAT 6.2" and contains the following text:

A toy car (0.50 kg) runs on a frictionless track.... Preview

A toy car (0.50 kg) runs on a frictionless track and has an initial kinetic energy of 2.2 J, as the drawing shows. The numbers beneath each hill give the heights of the hills. Over which of the hills will the car coast?

The diagram shows a toy car starting from the left with an initial kinetic energy $K_{E_0} = 2.2 \text{ J}$. The track has five hills labeled A, B, C, D, and E. The heights of the hills are given as 0.10 m, 0.20 m, 0.30 m, 0.40 m, and 0.50 m respectively. The car is shown moving towards the first hill.

The multiple-choice options are:

- A
- A and B
- A, B, and C
- A, B, C, and D
- A, B, C, D, and E

The Self- Assessment Tests are linked directly to specific sections of the text. After you study these sections, the test allows you to assess your understanding of the material immediately. Each test contains thought-provoking conceptual questions as well as calculation problems. You can take the tests as often as you wish. They provide extensive feedback in the form of helpful hints and suggestions when incorrect answers are selected.

Assignments

From the Home Page you will be able to access assignments created by your instructor. Click on the word "Home" in the upper right hand corner of the screen to return to this page. Your screen should now look like this:

On the left hand side of the screen you will see the assignments due that week

Click on an assignment to open it. On the first page you will see what policies your instructor has set for that particular assignment. Policies include whether the assignment is scored, how many times you can take it, and if it can be submitted after the due date.

The screenshot shows a web browser window with the URL <http://194.04.98.76:19000/uni/player/index.uni?assignment=1181&agtype=test&assigned=undefined>. The page is titled "Chapter 6 Default Assignment" and is for "Suzie Smith" at Southern Illinois Univ. The "Policies" section is highlighted with a box and an arrow pointing to it. The policies are:

- This assignment is SCORED
- Number of submissions allowed: 1
- Duration: 1
- After due date: accessible but marked late
- Feedback: Immediate response; Show hint; Show solution; Show answer;
- Repetitions: Unlimited (change values)
- Tolerance value: 2%

Policies for the assignment

Gradebook

Your Student Gradebook allows you to track progress on assignments and see your scores on scored assignments. Because you may be allowed to repeat questions for practice, and in some cases submit the entire assignment more than once, this information is also given to you in detail.

To see your Gradebook, from the Homepage click on Gradebook in the upper left hand corner. The next screen will display a list of all your assignments. You can use the dropdown menu to display only assignments of a particular type: Scored, Scored-Overdue, or Unscored.

The list displays everything you need to know about your assignments:

- Name – the name given to the assignment by your instructor
- Type – either Questions/Exercises or Reading/Resources (only Questions/Exercises are scored)
- Completion Status – of the items assigned how many you have done
- Correct Status – for scored items how many you got right as a fraction of the total, for example if 5 questions were assigned and you got 4 right the status would be 4/5
- Completion Date – the due date assigned by your instructor

UHT student - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://194.84.98.76:19080/uni/student/main.uni?access=home

Cutnell & Johnson Physics, Sixth Edition
Southern Illinois Univ -- Geraldine Osnato -- Physics 210

Suzie Smith

Study&Practice Assignment **Gradebook** Home My Profile Help Logout

List of assignments

Short Help Line. [More info...](#)

Show Assignments:

| Assignment Name | Assignment Type | Status | Completion Status | Correct Status | Completion Date |
|--|---------------------|------------|-------------------|----------------|--------------------------|
| Chapter 1 Default Assignment | Test/Quiz | | 5 / 5 | 5 / 5 | Jun 23, 2003 11:44:14 PM |
| Chapter 6 Default Assignment | Test/Quiz | | 6 / 6 | 4 / 6 | Jun 23, 2003 11:49:02 PM |
| Reading for Chap 6 | Reading/Interaction | Not opened | 0 % | - | |
| Total: | | | 11 / 11 | 9 / 11 | |

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Done

Start

Internet

3:50 PM

Your Student Profile

You can access your student account from the Class Homepage by clicking on "My Profile" in the upper right side of your screen. Your username and password are required to gain access, so keep that information private from your classmates. Once you are logged into your account, you will have the ability to do the following:

- ▲ Change your password
- ▲ Change your email address
- ▲ Change other profile items such as phone number

Changing Your Password

Once you are inside your User Profile, you have the ability to change your password.

1. Type in a new password
2. Confirm new password by entering it a second time
3. Click "Update Profile"

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Your Username: _____ Date: _____
Your Password: _____ Date: _____

Getting Help

The online help system within eGrade will probably answer many of your questions. Access this by clicking on the **Help** button in the upper right hand corner of the screen. A new window will pop up as shown below.

Navigate the help menu by using the folders in the left hand column or do a key word search

