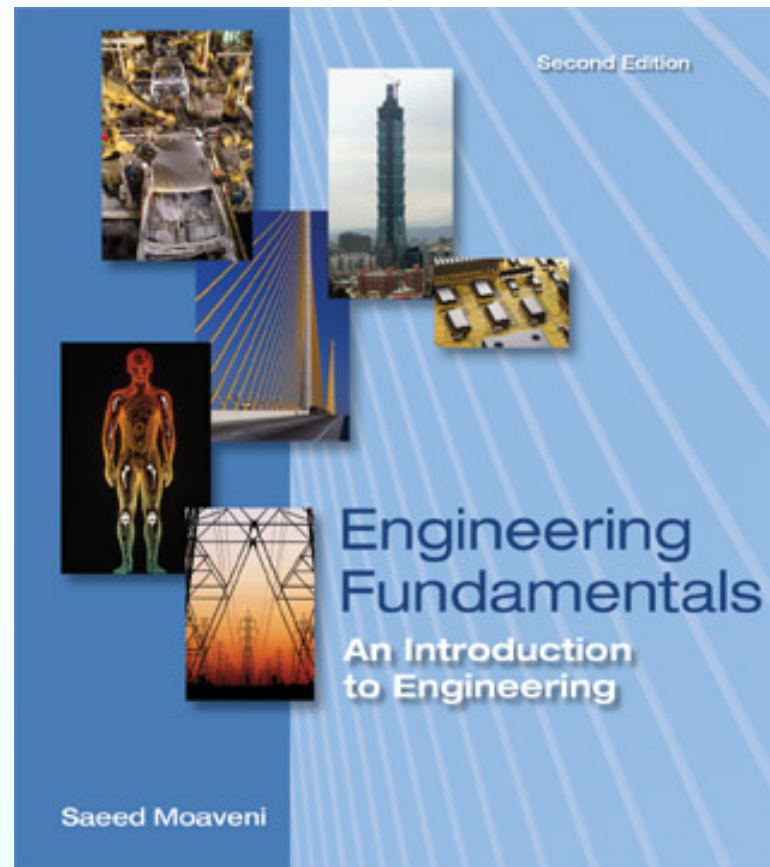


CHAPTER 4

Engineering Communication



Basic steps involved in the solution of engineering problems

- Step1: defining the problem. ask many questions in order to obtain an appropriate solution for the problem
- Step2: simplifying the problem. understanding the physical laws and the fundamental concepts as well as where and when to apply them and their limitations will help you take reasonable assumptions and estimations that simplify the problem to solve
- Step3:performing the solution or analysis. This is applying the physical laws to obtain an appropriate solution
- Step4: verifying the results. Engineering work is very responsible, mistakes could end up with deaths or injuries. Verifying the work is going through it again, changing parameters and testing, to see if any 'weak points' would appear in the system

Homework presentation

Course number	Date due	Assignment number	Last name, first name	1 2
Problem number SKETCH <i>The purpose of a diagram is to show the given information graphically. By drawing a diagram, you are forced to focus and think about what is given for a problem. On a diagram you want to show useful information such as dimensions, or represent the interaction of whatever it is that you are investigating with its surroundings. Below or along side of the diagram you may list other information that you cannot easily show on the diagram.</i>		Number of this sheet Total number of sheets in the assignment		GIVEN
1. 2. <i>In this block you want to itemize what information you are searching for.</i> 3.				
SHOW ANY DIAGRAMS THAT MAY COMPLEMENT THE SOLUTION ON THE LEFT-HAND SIDE. ↓		SHOW CALCULATIONS ON RIGHT-HAND SIDE. ↓ <i>List all assumptions. Show completely all steps necessary, in an organized, orderly way, for the solution.</i>		SOLUTION
Double underline answers. ← Do not forget about units.				Answer

Problem 3.1

A tank of compressed air

$$P = 20.8 \text{ MPa}$$

$$V = 10 \text{ liters} = 0.01 \text{ m}^3$$

$$R = 287 \frac{\text{J}}{\text{Kg} \cdot \text{K}}$$

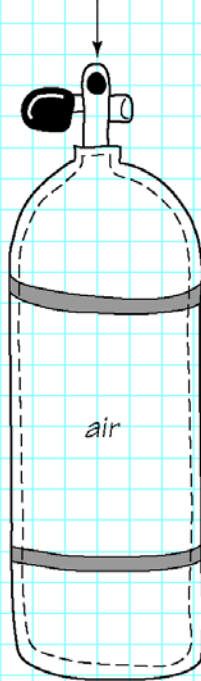
$$T = 20^\circ \text{C} = 293 \text{ K}$$

GIVEN

Mass of air inside the tank, $m = ?$

FIND

Any assisting diagrams



Calculations on the right

Assuming ideal gas behavior

$$PV = mRT$$

Eq(1)

where

$$P = 20.8 \text{ MPa} = 20.8 \times 10^6 \frac{\text{N}}{\text{m}^2}$$

$$V = 10 \text{ liters} = 0.01 \text{ m}^3$$

$$R = 287 \frac{\text{J}}{\text{Kg} \cdot \text{K}}$$

$$T = 273 + 20 = 293 \text{ K}$$

Substituting into Eq (1)

$$(20.8 \times 10^6 \frac{\text{N}}{\text{m}^2})(0.01 \text{ m}^3) = m(287 \frac{\text{J}}{\text{Kg} \cdot \text{K}})(293 \text{ K})$$

and realizing that $1 \text{ J} = 1 \text{ N} \cdot \text{m}$,

$$\underline{\underline{m = 2.473 \text{ Kg}}}$$

SOLUTION

Always double-underline answers
and state units


Index answer

Reports and memos

- **Progress reports:** periodic reports presenting the state of evolution of a certain project
- **Executive summary:** a brief and concise report communicated to a person in top management position in a company
- **Short memo:** used for conveying quick notes, under 2 pages in length
- **Detailed technical report:** contains thorough information and figures / charts about a certain topic or project

General format of a short memo

Date: May 3, 2001
From: Mr. John Doe
To: Members of Project X
Re: Budget Request



Parts of a detailed report

- Title
- Abstract
- Objectives
- Theory and analysis (define unfamiliar terms, state assumptions, principles, models)
- Apparatus and experimental procedures
- Data and results
- Discussion of the results
- Conclusions and recommendations
- Appendix
- References

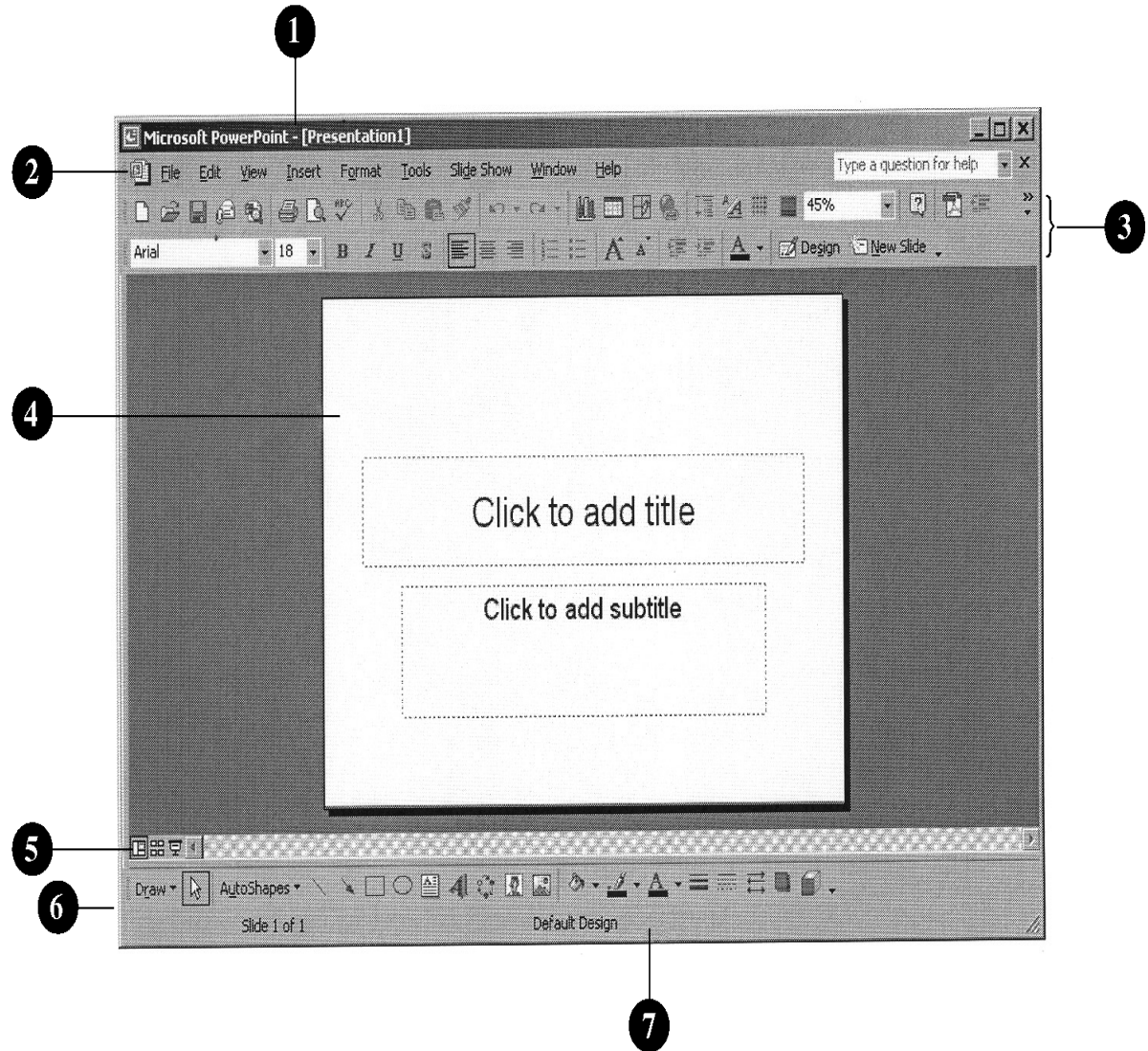
Sample title sheet

All State University Department of Mechanical Engineering	
Course Title	
Experiment No. _____	
Experiment Title _____	

Date Experiment Completed _____	
Students' Names _____	

Introduction to powerpoint

1. Title
2. Menu
3. Toolbar
4. Current slide
5. View buttons
6. Drawing toolbar
7. Status bar



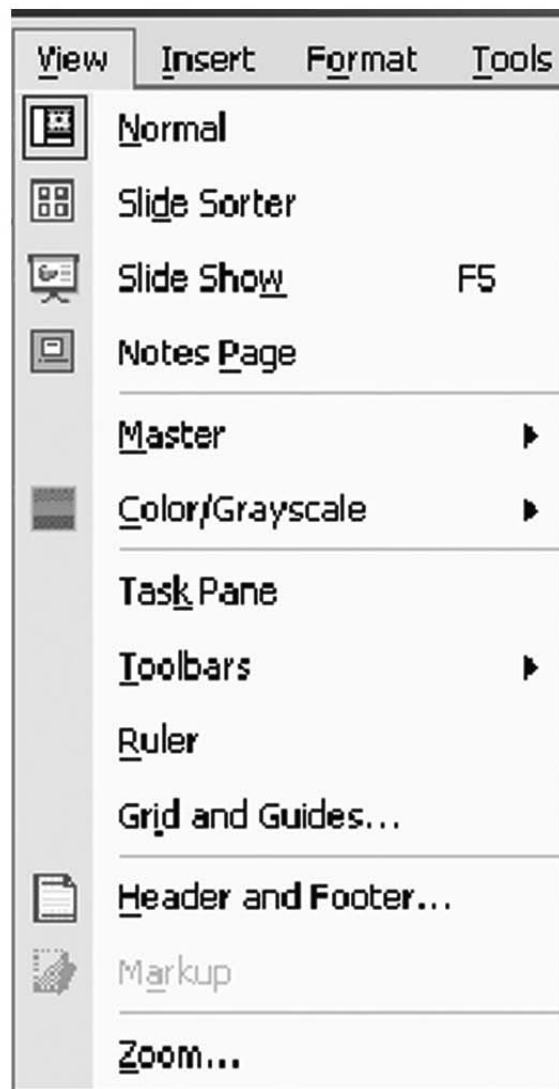


Figure 4.4
View options of PowerPoint.

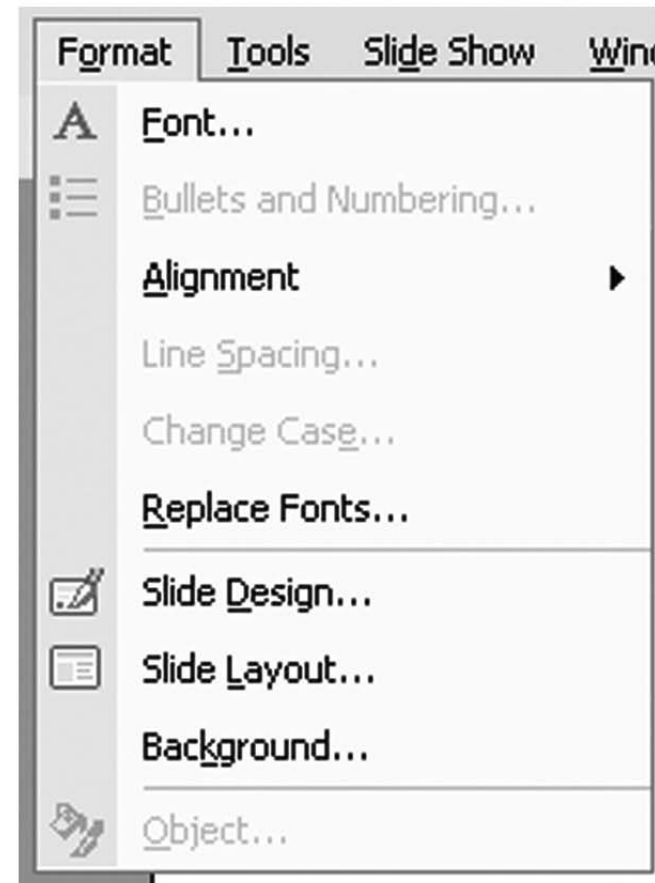


Figure 4.5 Format options of PowerPoint.

- Go to format then slide layout or slide design to obtain these windows

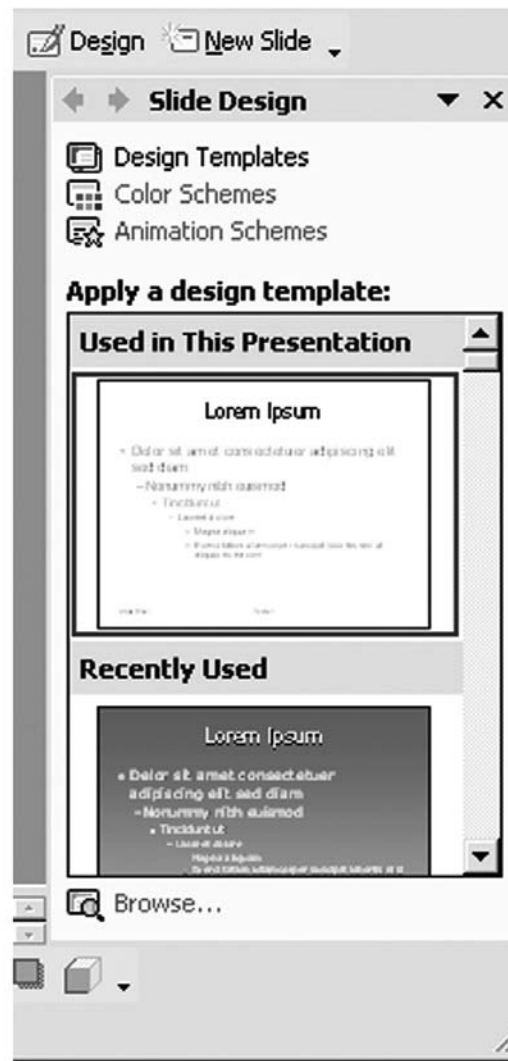


Figure 4.6 The design templates of PowerPoint.

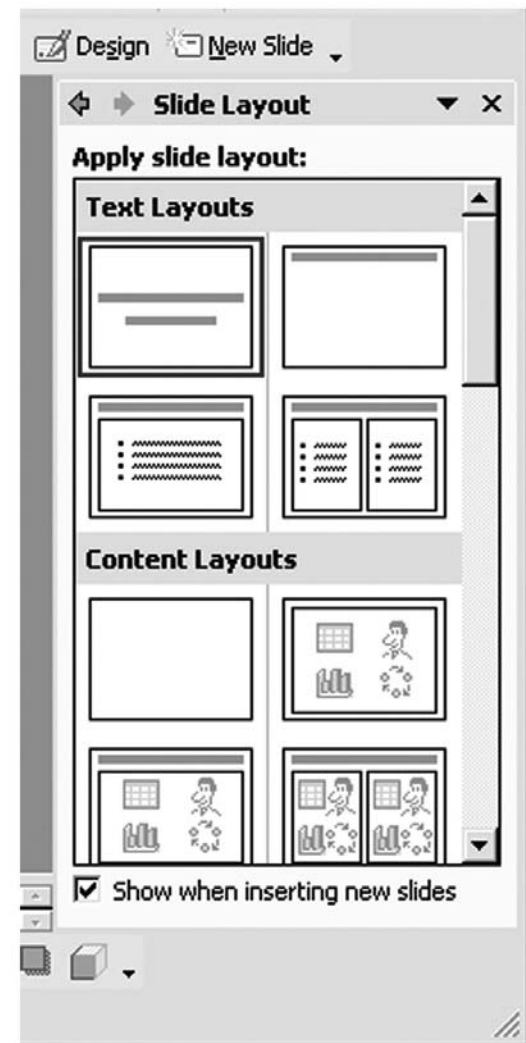


Figure 4.7 Slide layout of PowerPoint.

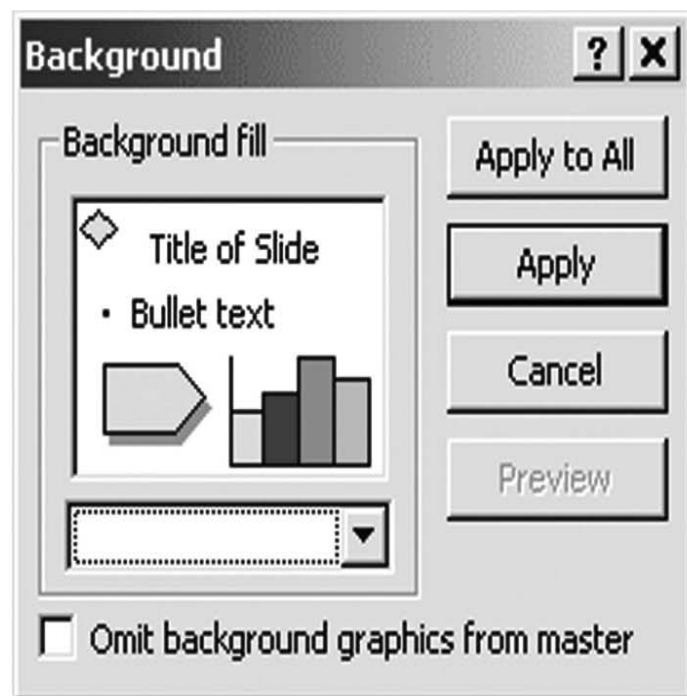


Figure 4.8 Background color window.

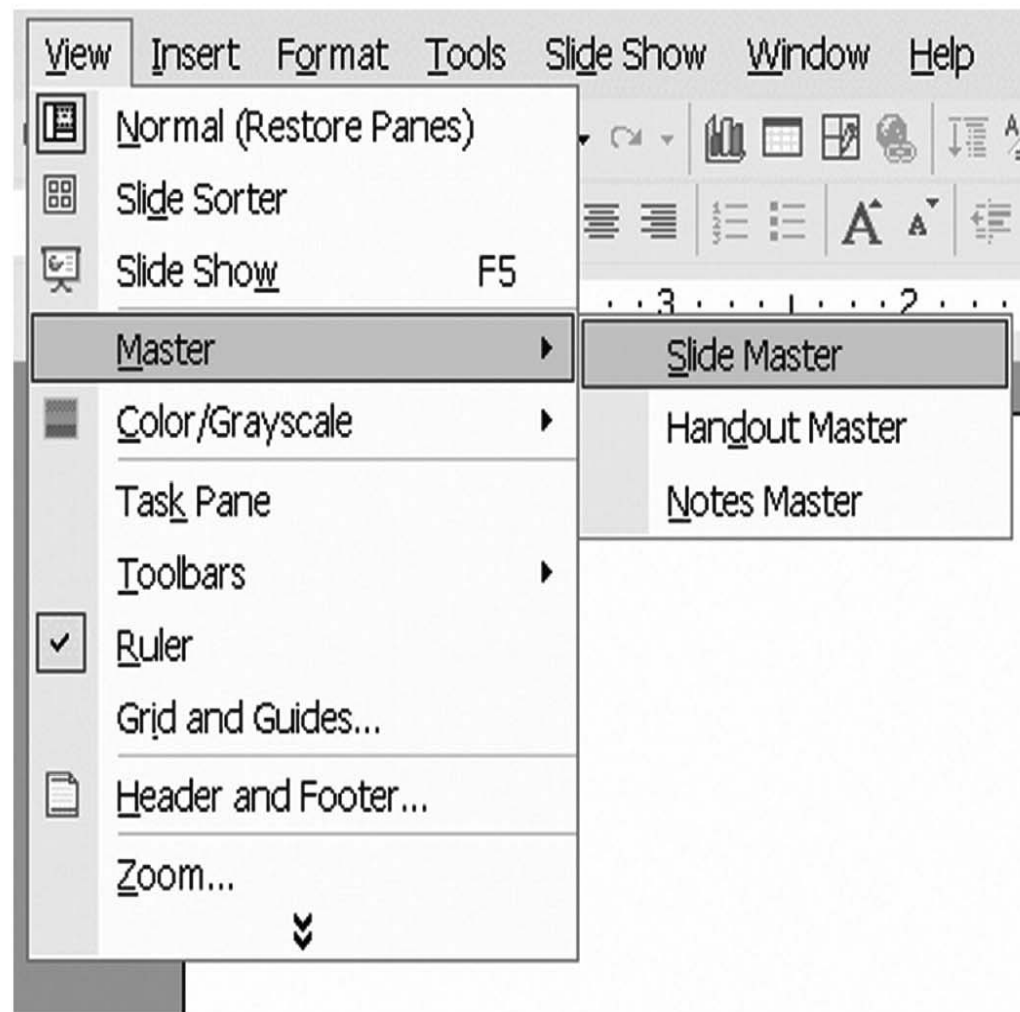


Figure 4.9 Accessing slide master.

Figure 4.11
Selecting slides from other files.

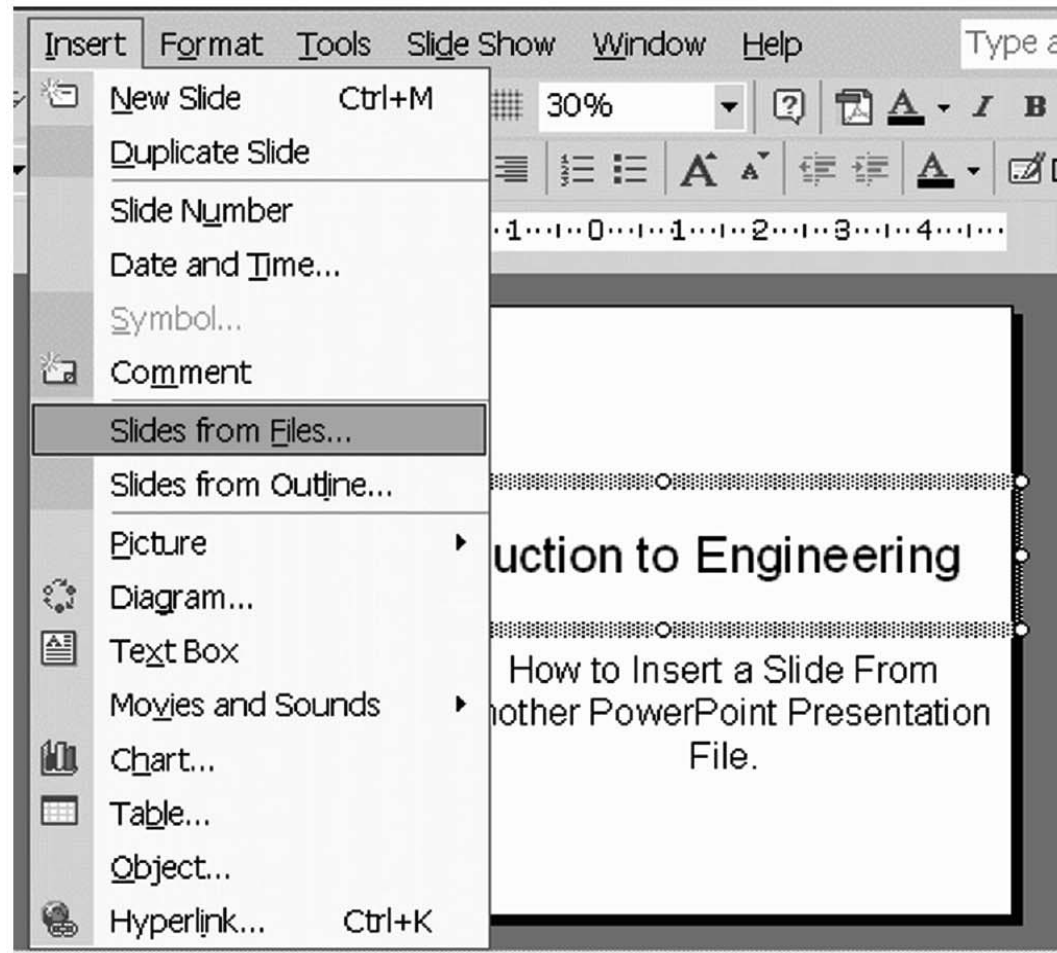




Figure 4.14
Selecting Slide Transition.

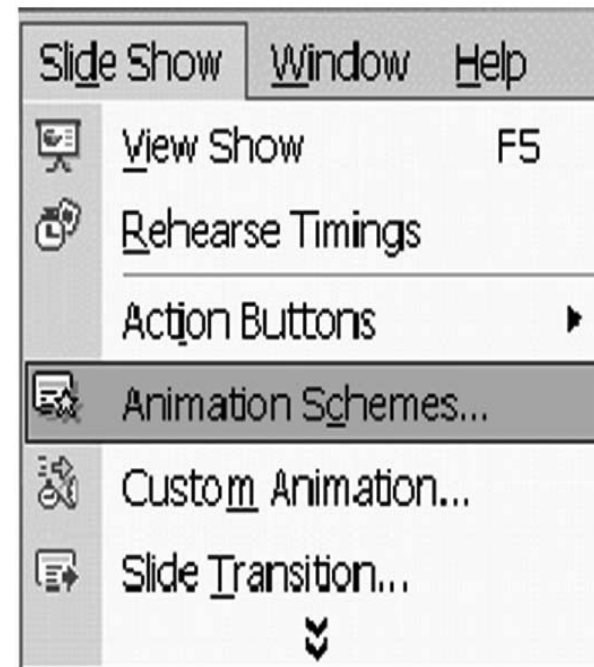


Figure 4.16
Selecting Animation Schemes.

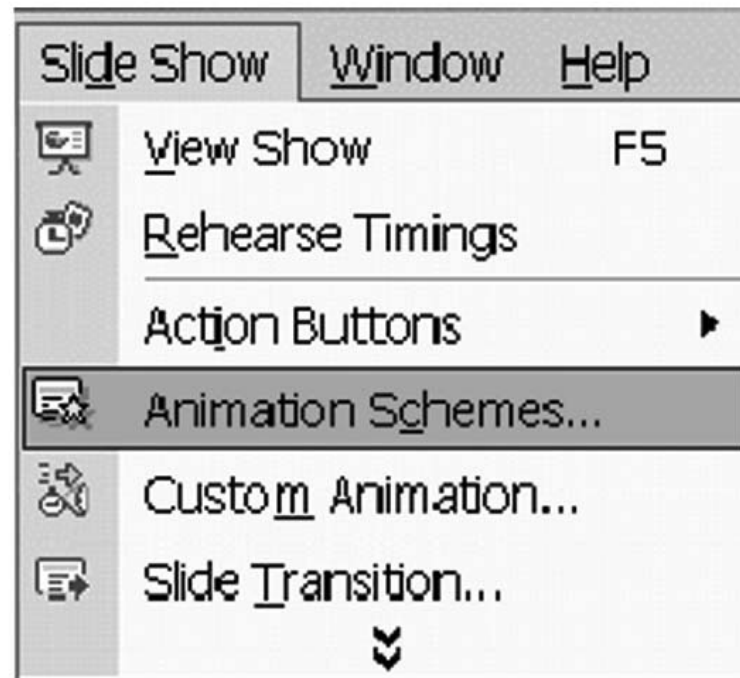


Figure 4.16
Selecting Animation Schemes.

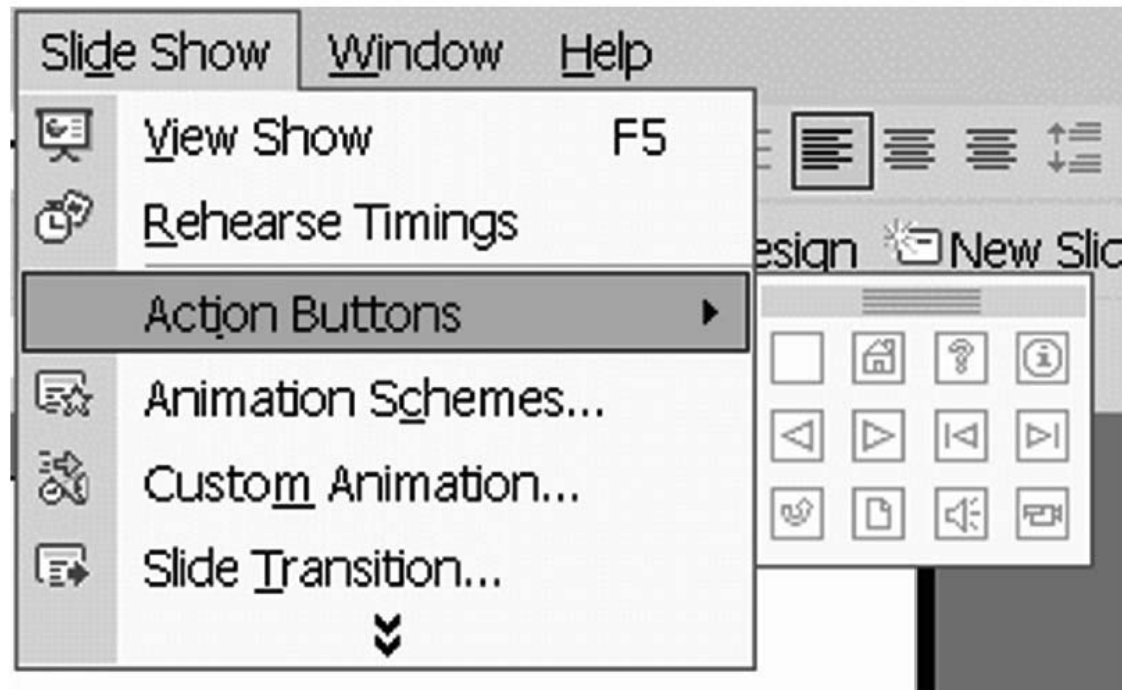


Figure 4.18 Selecting Action buttons.

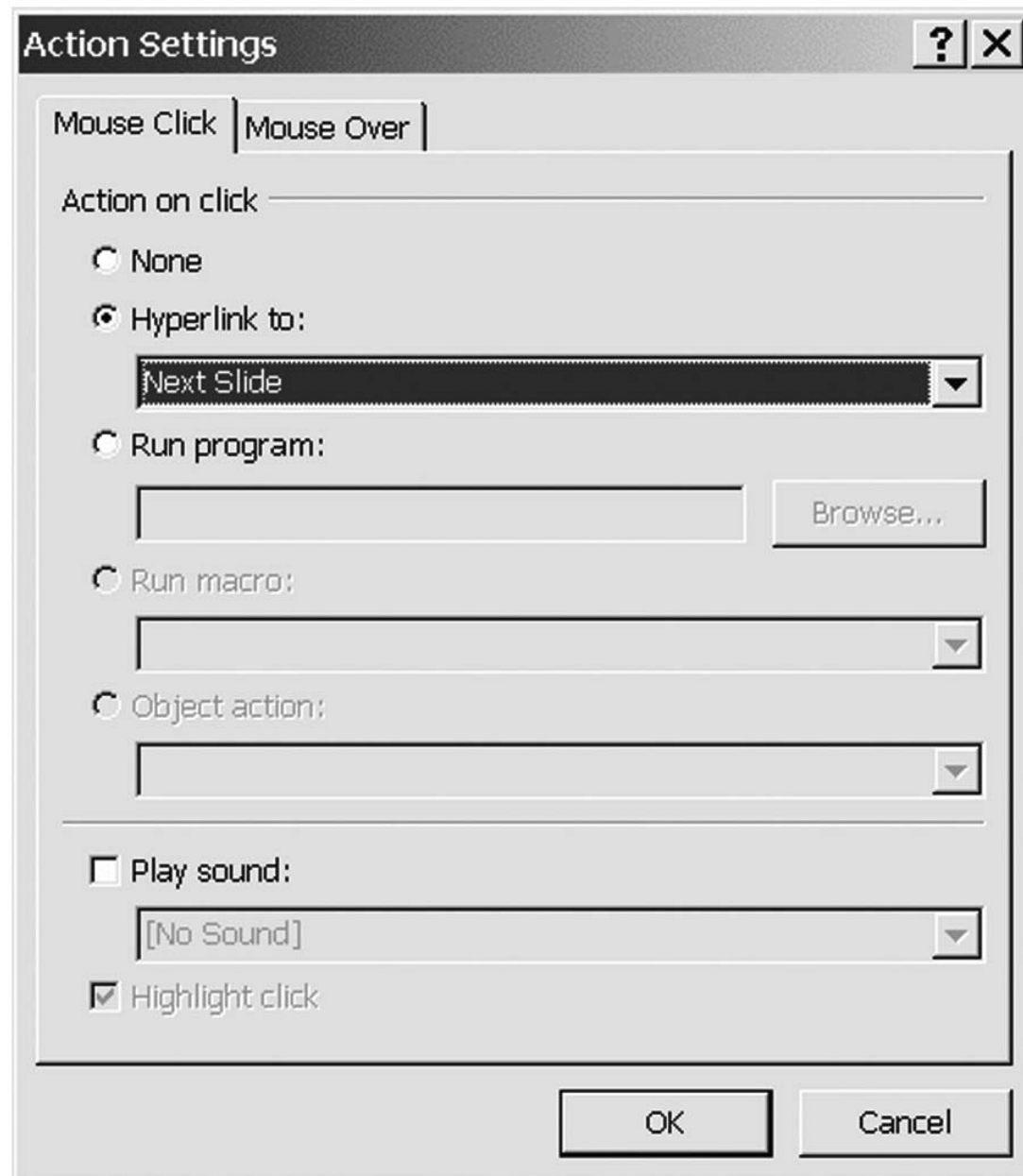


Figure 4.20 Action button settings.

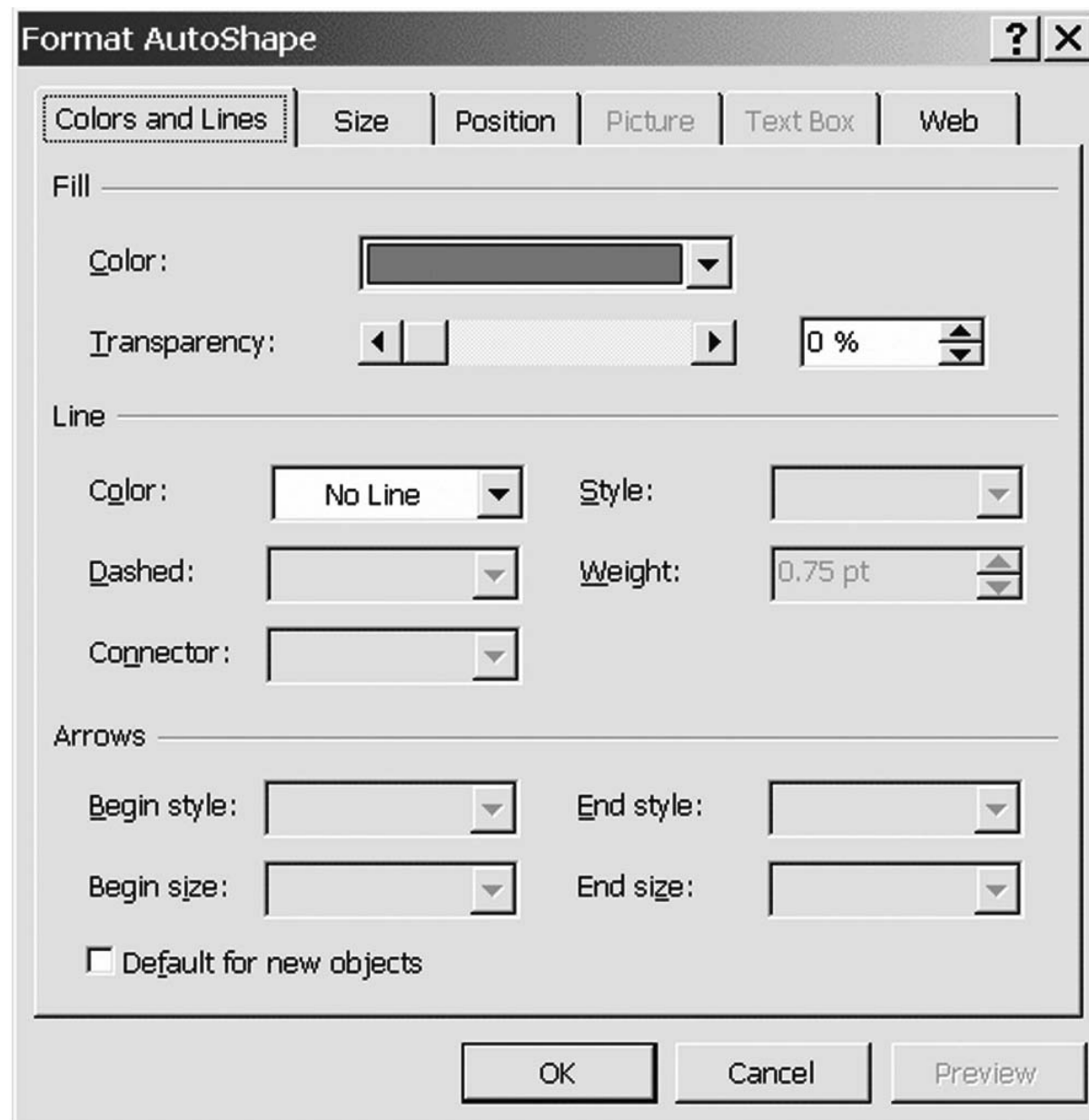


Figure 4.21 Changing button attributes.

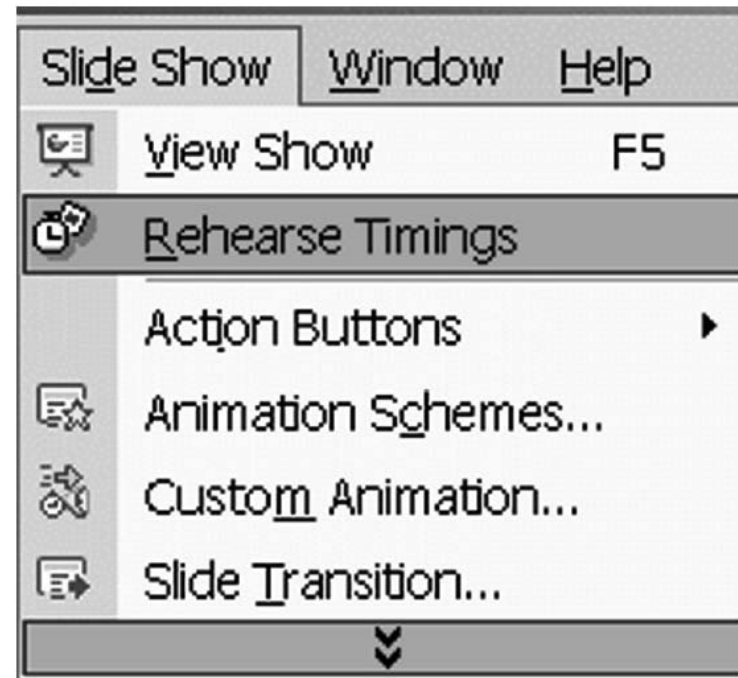


Figure 4.22
Selecting Rehearse Timings.