Mathcad Prime
Curriculum Guide
Live Classroom Curriculum Guide

- Mathcad Prime 1.0 Essentials
Mathcad Prime 1.0 Essentials

Overview

Course Code  
TRN–3260–T

Course Length  
2 Days

This course introduces the essentials of Mathcad Prime. It reinforces Mathcad Prime’s extensive functionality using clear, straightforward, trainer-led instruction and examples. This course will familiarize the user with many of Mathcad Prime’s critical features to ensure immediate application of the product.

Course Objectives

- Open and save Mathcad files.
- Navigate the Mathcad workspace.
- Identify and format math and text regions.
- Develop and edit math expressions.
- Define, evaluate, and use variables.
- Assign an expression retroactively.
- Define and evaluate user-defined and built-in functions.
- Define, evaluate, and use range variables.
- Use units in calculations.
- Plot 2-D graphs.
- Solve for the roots of a function with a single independent variable.
- Numerically solve a system of linear and nonlinear equations.
- Solve unconstrained and constrained optimization problems.
- Solve ordinary differential equations.
- Create a program within the Mathcad worksheet using Mathcad's programming features.
- Import and export data.
- Smooth, interpolate, and regress data.
Prerequisites

- N/A

Audience

- This class is intended for the novice or intermediate user of Mathcad.
## Agenda

### Day 1

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Web Based Curriculum Guide

- Mathcad Prime 1.0 - Application Orientation
- Mathcad Prime 1.0 - Plotting
- Mathcad Prime 1.0 - Working With Units
- Mathcad Prime 1.0 - Solving Equations
- Mathcad Prime 1.0 - Programming Mathematical Expressions
- Mathcad Prime 1.0 - Data Exchange and Analysis
- Mathcad Prime 1.0 Integration with Creo Elements/Pro 5.0
Mathcad Prime 1.0 - Application Orientation

Overview

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This course introduces the essentials of Mathcad Prime. It reinforces Mathcad Prime's extensive functionality using clear, straightforward instruction and examples. This course will familiarize the user with many of Mathcad Prime's critical features to ensure immediate application of the product.

Course Objectives

- Open and save Mathcad files.
- Navigate the Mathcad workspace.
- Identify and format math and text regions.
- Develop and edit math expressions.
- Define, evaluate, and use variables.
- Assign an expression retroactively.
- Define and evaluate user-defined and built-in functions.
- Define, evaluate, and use range variables.
- Define and use vectors and matrices.

Prerequisites

- N/A

Audience

- This class is intended for the novice or intermediate user of Mathcad.
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Mathcad Prime 1.0 - Plotting

Overview

Course Code: SAB-CEK5190
Course Length: 2 Hours

This course introduces the essentials of 2-D Plotting using Mathcad Prime. It reinforces Mathcad Prime’s plotting functionality using clear, straightforward instruction and examples.

Course Objectives

- Plot 2-D graphs.
- Format 2-D graphs.

Prerequisites

- CEK–5189 Mathcad Prime 1.0 – Application Orientation

Audience

- This class is intended for the novice or intermediate user of Mathcad.
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Mathcad Prime 1.0 - Working With Units

Overview

Course Code: SAB-CEK5191
Course Length: 2 Hours

This course introduces the essentials of working with units using Mathcad Prime. It reinforces Mathcad Prime’s units functionality using clear, straightforward instruction and examples.

Course Objectives

- Use units in calculations.

Prerequisites

- CEK–5189 Mathcad Prime 1.0 – Application Orientation

Audience

- This class is intended for the novice or intermediate user of Mathcad.
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Mathcad Prime 1.0 - Solving Equations

Overview

Course Code  SAB-CEK5192
Course Length  2 Hours

This course introduces the essentials of solving equations using Mathcad Prime. It reinforces Mathcad Prime’s units functionality using clear, straightforward instruction and examples.

Course Objectives

- Solve for the roots of a function with a single independent variable.
- Numerically solve a system of linear and nonlinear equations.
- Solve unconstrained and constrained optimization problems.
- Solve ordinary differential equations.

Prerequisites

- CEK–5189 Mathcad Prime 1.0 – Application Orientation

Audience

- This class is intended for the novice or intermediate user of Mathcad.
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Mathcad Prime 1.0 - Programming Mathematical Expressions

Overview

Course Code: SAB-CEK5193  
Course Length: 3 Hours

This course introduces the essentials of programming using Mathcad Prime. It reinforces Mathcad Prime's units functionality using clear, straightforward instruction and examples.

Course Objectives

- Create a program within the Mathcad worksheet using Mathcad's programming features.

Prerequisites

- CEK–5189 Mathcad Prime 1.0 – Application Orientation

Audience

- This class is intended for the novice or intermediate user of Mathcad.
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Module  1  Programming
Mathcad Prime 1.0 - Data Exchange and Analysis

Overview

Course Code: SAB-CEK5194
Course Length: 3 Hours

This course introduces the essentials of importing and exporting data, and data analysis using Mathcad Prime. It reinforces Mathcad Prime’s units functionality using clear, straightforward instruction and examples.

Course Objectives

- Import and export data.
- Smooth, interpolate, and regress data.

Prerequisites

- CEK–5189 Mathcad Prime 1.0 – Application Orientation
- CEK–5190 Mathcad Prime 1.0 – Plotting

Audience

- This class is intended for the novice or intermediate user of Mathcad.
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Mathcad Prime 1.0 Integration with Creo Elements/Pro 5.0

Overview

Course Code | SAB-CEK5164
Course Length | 2 hours

This course is designed for users who already know Mathcad Prime and Creo Elements/Pro 5.0 and wish to understand how to use both of the products in conjunction with one another.

Course Objectives

- Understanding licensing and software requirements.
- Mapping variables in Mathcad Prime to receive information from Creo Elements/Pro 5.0.
- Mapping variables in Mathcad Prime to return information to Creo Elements/Pro 5.0.
- Performing a Mathcad analysis in Creo Elements/Pro 5.0.

<table>
<thead>
<tr>
<th>Number of Active Coils</th>
<th>$N_0 = 1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter of the wire</td>
<td>$d_w = 1\cdot\text{mm} = 0.039\text{ in}$</td>
</tr>
<tr>
<td>Force on the spring</td>
<td>$F = 1\cdot N = 0.225\text{ lb}$</td>
</tr>
<tr>
<td>Coil diameter</td>
<td>$D_c = 10\cdot\text{mm}$</td>
</tr>
<tr>
<td>Shear modulus</td>
<td>$G = 77.2\cdot\text{GPa} = (1.12\cdot 10^{7})\text{ psi}$</td>
</tr>
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Prerequisites

- T3260 Mathcad Prime 1.0 Essentials or equivalent experience.
- T2232 Introduction to Creo Elements/Pro 5.0 or equivalent experience.

Audience

This course is intended for design engineers and mechanical designers. People in related roles will also benefit from taking this course.
## Agenda

### Day 1

| Module 1 | Mathcad Prime 1.0 Integration with Creo Elements/Pro 5.0 |