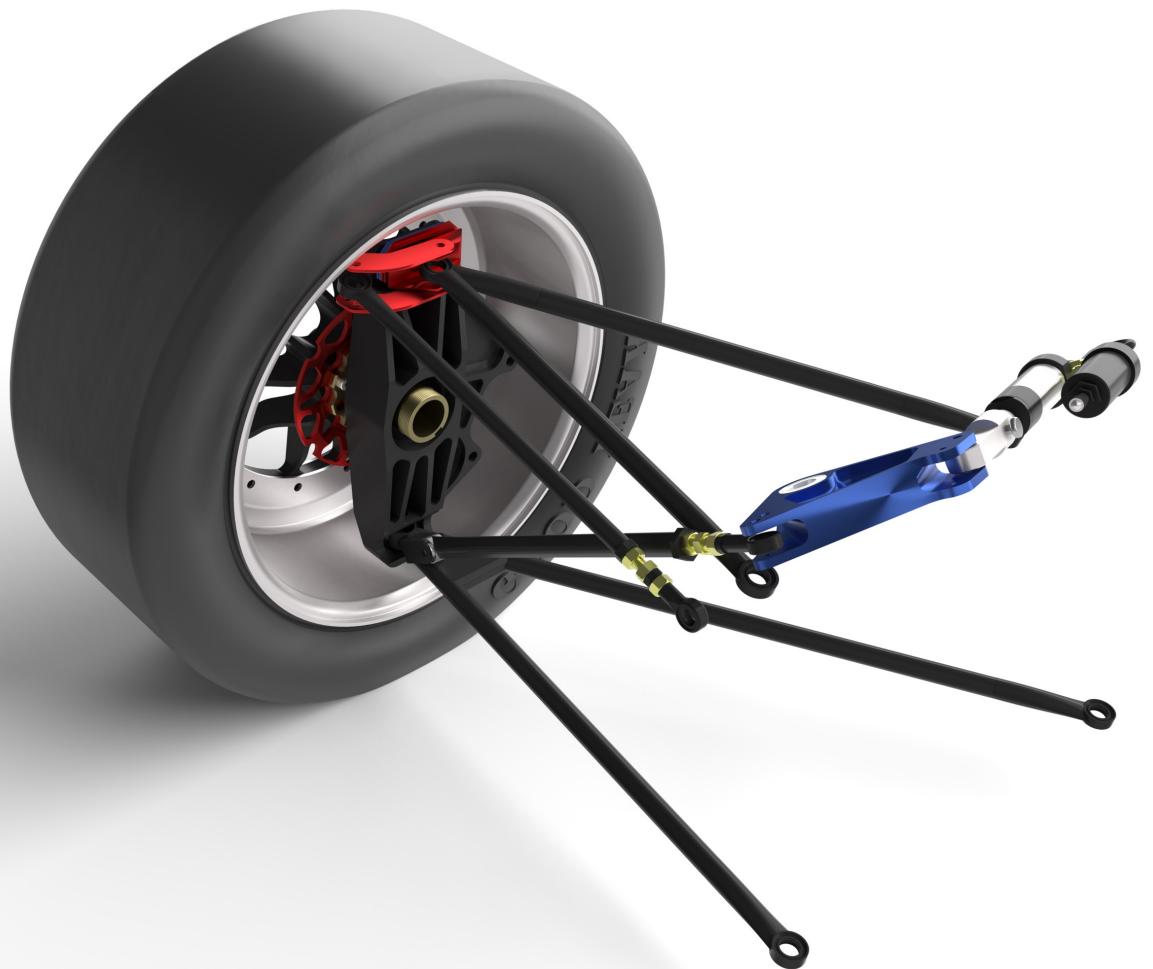


# Mechanism Design and Analysis

Using PTC® Creo® Mechanism 9.0



Kuang-Hua Chang, Ph.D.

Visit the following websites to learn more about this book:



**Table of Contents**

Preface .....	i
Acknowledgments .....	iii
About the Cover Page .....	iv
Table of Contents .....	v

**Lesson 1: Introduction to *Mechanism***

1.1 Overview of the Lesson.....	1-1
1.2 What is <i>Mechanism</i> ? .....	1-1
1.3 Mechanism and Motion Analysis.....	1-3
1.4 <i>Mechanism</i> Capabilities .....	1-5
1.5 Open Lesson 1 Model.....	1-13
1.6 Motion Examples .....	1-14

**Lesson 2: A Ball Throwing Example**

2.1 Overview of the Lesson.....	2-1
2.2 The Ball Throwing Example .....	2-1
2.3 Using <i>Mechanism</i> .....	2-3
2.4 Result Verifications .....	2-15
Exercises .....	2-17

**Lesson 3: A Spring-Mass System**

3.1 Overview of the Lesson.....	3-1
3.2 The Spring-Mass System.....	3-1
3.3 Using <i>Mechanism</i> .....	3-3
3.4 Result Verifications .....	3-11
Exercises .....	3-15

**Lesson 4: A Simple Pendulum**

4.1 Overview of the Lesson.....	4-1
4.2 The Simple Pendulum Example .....	4-1
4.3 Using <i>Mechanism</i> .....	4-3
4.4 Result Verifications .....	4-10
Exercises .....	4-14

**Lesson 5: A Slider-Crank Mechanism**

5.1 Overview of the Lesson.....	5-1
---------------------------------	-----

---

5.2 The Slider-Crank Example.....	5-1
5.3 Using <i>Mechanism</i> .....	5-4
5.4 Result Verifications.....	5-17
Exercises .....	5-22

**Lesson 6: A Compound Spur Gear Train**

6.1 Overview of the Lesson.....	6-1
6.2 The Gear Train Example .....	6-2
6.3 Using <i>Mechanism</i> .....	6-4
Exercises .....	6-15

**Lesson 7: Planetary Gear Train Systems**

7.1 Overview of the Lesson.....	7-1
7.2 The Planetary Gear Train Examples.....	7-2
7.3 Using <i>Mechanism</i> .....	7-5
Exercises .....	7-17

**Lesson 8: Cam and Follower**

8.1 Overview of the Lesson.....	8-1
8.2 The Cam and Follower Example.....	8-1
8.3 Using <i>Mechanism</i> .....	8-4
Exercises .....	8-13

**Lesson 9: Assistive Device for Wheelchair Soccer Game**

9.1 Overview of the Lesson.....	9-1
9.2 The Assistive Device.....	9-1
9.3 Using <i>Mechanism</i> .....	9-4
9.4 Result Discussion .....	9-9

**Lesson 10: Kinematic Analysis for a Racecar Suspension**

10.1 Overview of the Lesson.....	10-1
10.2 The Quarter Suspension .....	10-2
10.3 Using <i>Mechanism</i> .....	10-5
10.4 Full-Vehicle Dynamic Simulation.....	10-12

**Appendix A: Defining Joints.....** A-1**Appendix B: Defining Measures.....** B-1**Appendix C: The Default Unit System.....** C-1**Appendix D: Functions.....** D-1