

VOLUME I : SHOP BASICS, DRAWING, AND CAD

GUIDE TO SHOP AND ENGINEERING

FOR SECONDARY SCHOOL STUDENTS

By Kent Misegades
with
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**README
LESSONS**



*From a Biblical
Worldview*

available at
LULU.com



How to Use these Lecture Notes

1. **Read** the printed volume, **Shop & Engineering**, for each chapter.
2. **Gather materials** needed for each chapter's lessons, exercises and for recommended projects.
3. Use these Lecture Notes to **teach and discuss** the material. They contain more than the print version!
4. Work through all the **exercises** and check results. Correct errors and repeat until **100% correct**.
5. Take time to discuss the “**Questions to Ponder**” and “**What the Bible Says About**” sections at the end.
6. **Reinforce classroom learning** by doing one or more related **projects** in your workshop.



Contents

Preface: The Purpose of Education, Work and these Lessons

Introduction: So, you want to learn to make things and fix things?

Chapter One: Preparing for these Lessons

Chapter Two: Set Up your Workshop

Chapter Three: Hand Tool Identification and Usage

Chapter Four: Power Tool Identification and Usage

Chapter Five: Shop Safety

Chapter Six: Units and Measurements

Chapter Seven: Engineering Lettering

Chapter Eight: Sketching – Straight Lines

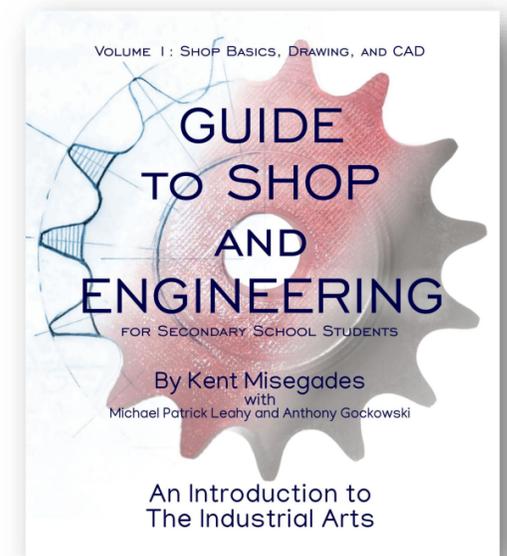
Chapter Nine: Sketching – Circles, Arcs, Ellipses and Curves

Chapter Ten: Sketching – Chamfers, Fillets and Rounds

Chapter Eleven: Multi-View Drawings

Chapter Twelve: Pictorial Views

Chapter Thirteen: Dimensioning and Scaling



Contents (cont'd)

Chapter Fourteen: CAD – Introduction to Computer Aided Design

Chapter Fifteen: 3D Print your CAD Designs

Chapter Sixteen: The Engineering Design Process

Chapter Seventeen: What's Next?

Glossary

Key Conversion Factors Between US Customary and Metric Units

Key Conversion Factors Between Metric and US Customary Units

Graph Paper Work Sheets, Cartesian and Isometric

Single-Stroke Gothic Lettering Template

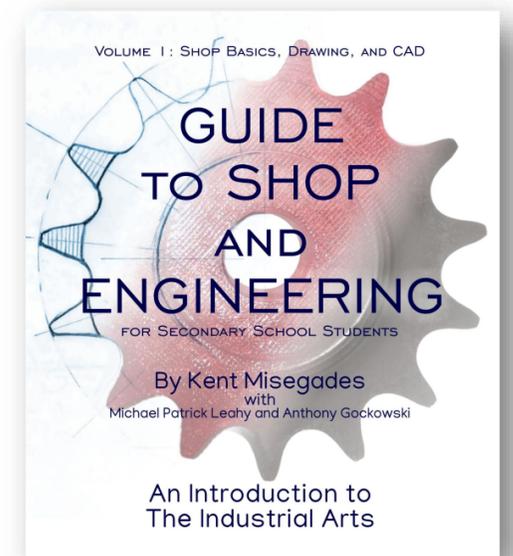
23 Shop Projects

Additional Reading

About the Author

Throughout the Guidebook: American Inventors

Throughout the Guidebook: Leading Schools



These Lessons Inspired By

RenewaNation

Helping Children Develop a Biblical Worldview



iLumenEd
ONLINE CHRISTIAN EDUCATION



**EXODUS
MANDATE**



The Author – Kent Paul Misegades



The author's 1952 Cessna 170B



Glen-L "Tuffy" built by author

- Christian, Husband, Father, Grandfather
- 40+ years engineering experience, much as manager, director and business owner
- Pilot, aircraft & boat builder since teenage years
- BSc Mechanical Engineering, Auburn University - *War Eagle!*
- MSc Applied Aerodynamics, Von Karman Institute for Fluid Dynamics
- Helped establish world-class K-12 schools, Thales Academies
- Co-founded world-class apprenticeships, NCTAP.org
- Developed and taught high school shop & engineering curricula
- Passion is flying, sailing, designing & making things - and teaching young people skills
- Founder and President of AeroSouth.net, Seven Lakes, North Carolina

