

**How Precision Created the Modern World**

**LLC Class Winter 22**

	Topics / chapters	Hour 1	Hour 2
Jan 12	Chuck Nickles and Lee Ashcraft	Welcome! Introductions. An overview of the course. Discussion of the course format and Zoom. Your thoughts on the book, and precision and technology in general. Sharing our experiences about precision or measurement as the author does in the prologue.	
Jan 19	Chapter 1 ,2	Steam: “Iron-mad Wilkinson” Newcomen , and Bolton/ Watt Steam engines <i>Presenter:</i>	Chap 2 Mass Production and Interchangeable parts, Brunel and Maudslay manufacture ships pulley blocks
Jan 26	Chapter 3	Guns: Whitney, Blanchar <i>Presenter:</i>	<i>Guest Speaker, Tom Charlton Physicist, Metrologist</i>
Feb 02	Chapter 4, 5	Metrology , Flatness Great Exhibit or 1851 <i>Presenter:</i>	The Story Rolls Royce <i>Presenter :</i>
Feb 09	Chapter 5	The Story of Ford <i>Presenter</i>	<i>Guest Speaker Chris Evans, Professor Emeritus at UNC Charlotte.</i>
Feb 16	Chapter 6,7	The Jet engine presenter	Through the Lens Hubble Telescope, James Ebb Telescope
Feb 23	Chapter 8	The development of GPS <i>Presenter:</i>	Time: watches, quartz, atomic clocks (from several chapters) <i>presenter:</i>
Mar 2	Chapter 9 ,10	The Transistor, Microchips <i>Presenter:</i>	Review and discussion Equipoise

## **How Precision Created the Modern World**

### **Course Description**

We are surrounded by machines that perform some task for us every day. Some of them, like the generator supplying the electricity you're using right now, never stop. All sorts of machines must be made with precise measurements to operate reliably and safely, from the pop-top on a can of seltzer to the rockets that launch satellites in space. So how did we learn to measure and build with such accuracy? We'll explore the long and fascinating journey of the people developing methods and tools need to build with precision.

Participants will gain an understanding how various inventions motivated the need for precision, such as the steam engine, automobiles, jet engines and lenses to name a few. We'll also look into the lives of the individuals who worked to develop the methods needed to build these machines.

**Format:** Participants will read one or two chapters (about 40 pages) each class. Each person will make a presentation on a topic from the chapter, and lead a lively discussion. The presentation may be about a specific invention or process, the historical background, or about the individuals efforts in developing the invention. We'll also have two guest speakers who have extensive experience in the field of metrology. This is a Zoom class on Wednesdays, 10:00-12:00 starting Jan 12, for 8 meetings.

**Resources:** The text for this course is "The Perfectionist: How Precision Engineers Created the Modern World" by Simon Winchester. Paperback about \$15.00, on Amazon

### **Coordinators:**

Chuck Nickles is a retired physics lecturer. He also worked in industry on automated precision measurement system, and energy conservation.

Lee Ashcraft is an experienced LLC coordinator and former computer systems professional.