



UTS Teaches Fundamentals to Optimization in its Metal Gear Course

Teaching gear designers about modifications for optimizing gear sets is the goal of “Metal Gear Design & Manufacturing” and is described by instructor Jim Marsch as the course’s “most useful aspect.”

Offered by Universal Technical Systems Inc., the class starts with a fundamental understanding of spur and helical gears and continues with discussion of topics like standard proportions, quality and gear design, but Marsch teaches them with a particular end in mind.

“What I’m leading up to is modifications,” he says.

And what Marsch teaches is how to modify gears for greater load carrying capacity while still using standard forms. He also instructs students in the compromises that have to be made during modification, so they understand: “Not everything can be optimized at once.”

But fundamentals first. The four-day course provides attendees with a basic understanding of involute spur and helical gear geometry, teaches them to apply gear design concepts in their work and helps them develop a working knowledge of gear software tools available from Universal Technical Systems. UTS provides software and consulting services for plastic and metal gears and holds the course in its headquarters in Rockford, IL.

Each student receives a 180-page course book with copies of slides from Marsch’s PowerPoint presentations, as well as copies of problems and final reports on each problem. Also, students will be able to obtain older course material, from before UTS created Integrated Gear Software, its suite of gear

design software. The instructor, Marsch, offers the material for its example problems. He also offers students a CD containing a presentation on planetary gear design.

Marsch himself is UTS’ gear product manager. He’s a gear engineer with more than 35 years of experience, including 12 years with Allis-Chalmers, where he designed agricultural tractor powertrains, and 22 years at Harnischfeger Corp., where he designed powertrains for cranes.

Besides classroom work, the course includes tours of two gear-industry companies in the Rockford area: Gleason Cutting Tools Corp. and Forest City Gear. Marsch takes students on a tour of Gleason Cutting Tools because: “I think it’s very important for them to see the tools and how they’re made.” He takes them to Forest City Gear, a fine- to medium-pitch gear shop, so they can see how gears are cut, ground and inspected. “Most of the people who come to class have never seen gears cut,” Marsch says.

At the end of the course, students are able to meet one-on-one with Marsch for an hour to discuss individual gear problems and questions. Attendees interested in one-on-one time should bring their prints and design problems.

Also, after registering for the course, attendees have free access to “Fundamentals of Gearing,” an e-learning course from UTS. The online course is meant to teach basic gear design and manufacturing theory. The course provides explanations and formulas, graphics and animations for illustrating gear geometry, a glossary of gearing terms, and the ability to perform many calculations online using RuleMaster software, a Web version of UTS’ TK Solver program, which is the calculation engine for Integrated Gear Software.

The Web material includes a training module, which UTS describes as “a handy platform for experiments,” allowing users to enter different sets of data and view the results to get “a feel for the formulas.” The course includes quizzes, and users can download course notes in PDF format and print them.

UTS will next hold the Rockford course Sept. 19–22. The class is limited to 15 attendees, who share eight workstations. As long as space is available, people can register for the course as late as Sept. 18. The class costs \$1,250 per person.

Attendees reserve their hotel rooms themselves. However, UTS recommends the following hotels: Quality Suites of Rockford, Clock Tower Resort, and Candlewood Suites. Students reserving rooms at Candlewood can obtain a special room rate by mentioning UTS training.

For more information:
Kari Johnson
Universal Technical Systems Inc.
202 W. State St., Suite 700
Rockford, IL 61101
Phone: (815) 963-2220
Fax: (815) 963-8884
E-mail: sales@uts.com
Internet: www.uts.com

August 7–9—AGMA's Gear Manufacturing Technical Course. Liebherr facility, Saline, MI. Taught by Ron Greene and Geoff Ashcroft, the course covers gear theory, gear manufacturing, hobbing and shaping and their tools, production estimating, hard finishing, gear shaving and gear inspection. Tuition is \$750. For more information, contact the Gear Consulting Group at (269) 623-4993.

September 11–15—AGMA Basics Course for Gear Manufacturing. Richard J. Daley College, Chicago, IL. Course features nomenclature, principles of inspection and gear manufacturing methods, including hobbing and shaping. \$750 for AGMA members, \$850 for non-members. For more information, contact the AGMA at (703) 684-0211 or by e-mail at fentress@agma.org.

September 13–15—Basic Gear Noise Short Course. Department of Mechanical Engineering, Gear Dynamics and Gear Noise Research Laboratory, Ohio State University, Columbus, OH. Fundamentals of gearing, noise analysis and measurements are covered, and lectures are interspersed with demonstrations of the GearLab's measurement and computer software capabilities. \$1,450 for the basic course, \$2,200 for both the basic and advanced courses. For more information, contact the GearLab at (614) 688-3952 or via www.gearlab.org.

September 18–19—Advanced Gear Noise Short Course. Department of Mechanical Engineering, Gear Dynamics and Gear Noise Research Laboratory, Ohio State University, Columbus, OH. This is directed towards individuals who have already taken the basic course. The advanced course will consist of lectures and hands-on workshops. Based on student interest, course discussion may include subjects such as computer modeling, transmission error prediction, general system dynamics, bearing/casing dynamics and others. \$950 if taken alone, \$2,200 for both courses. For more information, contact the GearLab at (614) 688-3952 or via www.gearlab.org.

September 18–19—Gear Failure Analysis Seminar. Big Sky Resort, Big Sky, MT. Participants examine types of gear failure, such as macropitting, micropitting, scuffing, tooth wear and breakage. Possible solutions to these failures are presented. Early registration is recommended, as the June course was sold out. \$645 for AGMA members and \$820 for non-members. For more information, contact the AGMA at (703) 684-0211.

N.A. Woodworth

An *ITW* Workholding Company

"Quick-Pitch" Diaphragm

The new Quick-Pitch Diaphragm by N.A. Woodworth is designed specifically to provide quick and accurate part changeovers in a simple and economical manner. Aimed primarily at gear families, the chuck also has applications in hard turning and grinding operations where repeatability, inter-changeability and roundness are a concern.



FEATURES:

- Jaw change in 60 seconds
- Accommodates any number of gear teeth
- Compliance for tooth space variation
- Optional synchronizing pins for auto-load
- Standard "pull-back" action
- Centrifugal force compensation for higher speeds
- Minimal maintenance, no sliding parts
- Light weight assembly

2002 Stephenson Hwy., Troy, MI 48063 - Phone: 800-544-3823 Fax: 248-743-4401
www.itworkholding.com

ITW Workholding an ISO9001:2000 Registered Company



Proudly announcing our "STATE OF THE ART"

**Vacuum Carburizing & Carbonitriding furnace
from Seco/Warwick.**

This 36" W x 32" H x 72" L furnace comes equipped with the FineCarb control system which optimizes the carburizing, diffusion, & quenching stages to obtain specific effective case depths while minimizing distortion due to uneven heating and cooling rates found in typical liquid quenching furnaces.

**What this gives you,
the Gear Manufacturer, is a
HUGE COST SAVINGS
on Grinding costs and an
alternative to Press Quenching.**

THERM-TECH OF WAUKESHA

301 Travis Lane, Waukesha, WI 53189

Ph: 800-752-6917 • Fax: 262-549-4320

sales@thermtech.net • www.thermtech.net