INSTRUCTORS:
Göran Nyström
Goran.Nystrom@ovako.com

Who Should Attend
The course is intended to support gear engineers, gear designers, material specialists or metallurgists at OEMs, Tier 1s, Tier 2s, etc., production engineers, technicians and managers.

COURSE INFORMATION

Course Description
Gain a basic understanding of steel and its properties. Learn to make use of steel properties in an application and understand the potential that different steel and heat treatment options can offer. Explore how performance of the material depends on how the steel is produced.

It is recommended that you spend a minimum of 1 hour reading and reviewing the material each day.

Learning Objectives
- Describe how material properties affect by steel quality and heat treatment.
- Describe how stresses are introduced by heat treatment process and surface modification treatments.
- Explain how to select a steel and heat treatment combination to meet the demands of the application
- Review influence of material selection on the manufacturing of components
- Discuss how to verify and specify required steel properties

The training will be a mix of presentations and workshop activities. Discussions during the presentations are encouraged. The training will end with an electronic diagnostic so please bring mobile phone, tablet or laptop to the training.

Required Textbooks
Textbook will be provided by AGMA
I. Basic introduction to steel in fatigue applications

II. Matching the applied load with material strength and residual stresses.

III. Examples of standards – from a material perspective


V. Heat treatment and surface enhancement processes

VI. Fatigue – controlled by defects in high strength steel

VII. Steel making and metal working – how to control defects in steel

VIII. Quantification of steel – old and new methods

IX. Manufacturing – How different steel types and qualities affect the manufacturing

X. Summary – looking at the whole process from design to manufacturing

Weather Delays and Cancelations
We will communicate any cancellations, delays or other concerns for safety prior to class via email, voicemail, and/or text message. Please be sure that we have all pertinent contact information as you travel to your class location.

**STUDENT FEEDBACK AND GRADING PROCEDURES**

**Assignments**
Assignments and learning activities are given and directed at the discretion of the instructor.

**COURSE MANAGEMENT**

**Attendance for Domestic and International Students**
Please be mindful that these are short, accelerated courses. Attendance is extremely important. If you are going to be absent from any class day, please contact the course coordinator.
Casandra Blassingame, Vice President of Education Services, blassingame@agma.org or Rosemarie Bundoc, Education Manager, bundoc@agma.org.

**Plagiarism, Cheating and other types of Misconduct**
Plagiarism⁴, cheating and other types of misconduct are unacceptable.

**Students with Disabilities**
Students requiring assistance and accommodation should complete the Special Accommodation Request form and submit it to Rosemarie Bundoc at bundoc@agma.org. She can be reached at 703-838-0069.

**Grievance Procedures**
Students who have concerns about the class are encouraged to contact Casandra Blassingame, Vice President of Education Services at blassingame@agma.org or 703-838-0055.

**Outline Changes**
The instructor reserves the right to modify the outline during the course of the class.

**LEARNING AND OTHER RESOURCES**

Links for writing resources:
- grammar.ccc.commnet.edu/grammar
- www.merriam-webster.com

Links for Math resources:
- www.sosmath.com
- Khan Academy on www.youtube.com

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⁴ Plagiarism is defined as “the use or close imitation of the language and thoughts of another author and the representation of them as one’s own original work.”
Links for time management, study skills and note taking resources:

- www.mindtools.com
- www.testakingtips.com

Links for career resources:

- https://www.agma.org/newsroom/jobs/

Industry News:

- https://www.agma.org/newsroom/industry-news/