



SEER for Manufacturing Workshops

The purpose of our workshops on the SEER for Manufacturing (SEER-DFM) is to familiarize each participant with the basic concepts of process based estimation and the application of these concepts using the SEER for Manufacturing suite of processes. The course is comprised of both lessons and case studies designed to engage each student and make them proficient in the use and estimating techniques made possible by using the SEER for Manufacturing Model. The training is comprised of both Core and Advanced sessions. The class duration is dependant on the model selected and the manufacturing venue of the customer. Three course types are offered: Aerospace, Electronics or Industrial & Commercial. Galorath Incorporated will work with our customers to customize the SEER for Manufacturing workshops so they deliver the most precise training possible aimed at your business specialties and needs.

SEER for Manufacturing Workshops are only offered as individualized, private classes to enable each company to tailor the training to the process areas that are most relevant to their organization. SEER for Manufacturing Supported Processes include:

- Machining
- Finishing
- Fabrication
- Mechanical Assembly
- PC Board
- Electrical Assembly
- Mold/Cast/Forge
- Tube/Fab/Weld/Processing
- Composites
- Purchased Parts

CORE

The Core sessions give the students an introduction to SEER for Manufacturing concepts so they learn how to navigate and understand the model parameters. The class will perform trade studies, process based cost estimating, and access data from other databases, either

using Case study example exercises or real world "Live" estimating. The exercises will use customer-supplied part and assembly data in the form of sketches, drawings, bills of material etc. In order to accomplish this Galorath, will work with the customer to identify the training needs and information required.

Upon completion of the class, users will be able to:

- Apply SEER for Manufacturing to develop an estimate that covers labor material and tooling in their production environment.
- Have an in-depth understanding of all of the manufacturing processes covered in the workshop type selected

ADVANCED

In the advanced sessions the students will be developing and using SEER for Manufacturing's built in server mode API to exchange data with other databases and programs facilitating the model's automation capabilities. They will learn to understand the model's probability outputs and perform risk project and rollup risk calculations using a Monte Carlo approach, which is part of the SEER for Manufacturing model. Students will also be using the SEER for Manufacturing architecture to develop and use knowledge base templates and create custom calculations templates (input parameters, mathematical equations and outputs) to increase productivity and customize the SEER model for their individual needs. Students will gain an understanding of the SEER for Manufacturing input parameters and output values, and determine the most appropriate plans in terms of effort, cost and risk for any estimate they produce.

AEROSPACE

Schedule

Four (4) Days of Core and One (1) Day of Advanced.

Purpose

Open Workshop on SEER for Manufacturing with Composites with a focus on aerospace manufacturing.

The Advanced workshop teaches the students how to use SEER for Manufacturing software for conducting design for manufacturability analysis, parametric cost estimating, accessing

data from other databases, using knowledge bases and creating custom calculations (input parameters, mathematical equations and outputs). Modules covered will focus on the CAI Plug-in processes as they apply to aerospace manufacturing techniques and will also cover basic manufacturing processes including electrical assembly, PC board (fabrication, assembly, test and component costing), molding (injection, compression and blow molding), machining and cost roll-up. In addition to instruction on the use of the software, several case studies are covered during the class to give the students real hands-on experience. Concepts are applied to real world case studies to reinforce learning. Attendees will have ample opportunity to handle all the SEER for Manufacturing modules. Participants will apply manufacturing concepts to real world applications.

This course is designed for:

- Project Managers
- Product Managers
- Engineers (Design & Manufacturing)
- Engineering Management
- Finance
- Marketing
- Manufacturing
- Service and Corporate Management

SEER for Manufacturing Aerospace Core Course Outline

Day 1

1. Intro to SEER & Basic Concepts
2. Manufacturing Set-up
3. Running SEER for Manufacturing Example
4. SEER for Manufacturing Common Parameters
5. Fabrication
6. Assembly
7. Molding/Casting/Forging Processes
8. Finishing

Day 2

1. Machining
2. Sheet Metal Operations
3. SEER for Manufacturing Aero-Processes Overview
4. Fit-up
5. Fasten
6. Drill
7. Tubing

8. Purchased Parts
9. Additional Items

Day 3

1. Hand Lay-up
2. Tow Placement (Insitu-E-Beam Cure)
3. Filament Winding
4. 3D-Weave
5. Braiding
6. P4A
7. Autoclave Cure
8. Trim

Day 4

1. E-Beam Assembly & Fabrication
2. VARTM
3. RTM
4. Paste Bonding
5. SPF/dB
6. 3D-Reinforcement
7. Electrical Assembly
8. PCB Assembly

SEER for Manufacturing Aerospace Advanced Course Outline

Day 1

1. Intro to SEER & Basic Concepts
2. Developing Custom Knowledge Bases
3. Customizing SEER for Manufacturing
4. Server Mode Scripts
5. Risk & Probability
6. Reports, Charts & Outputs
7. SEER RateMaker
8. Summary

ELECTRONIC

Schedule

Three (3) Days of Core and One (1) Day of Advanced.

Purpose

Open Workshop on SEER for Manufacturing with a focus on Electronic manufacturing.

This workshop teaches the students how to use SEER for Manufacturing software for conducting design for manufacturability analysis, parametric cost estimating, accessing data from other databases, using knowledge bases and creating custom calculations (input parameters, mathematical equations and outputs). The SEER for Manufacturing Basic modules covered will focus on the Electrical Assembly, test and component costing, PCB fabrication and component installation, Cable and Harness development, molding (injection, compression and blow molding) fabrication, machining, and finishing's. In addition to instruction on the use of the software, several case studies are covered during the class to give the students real hands-on experience. Concepts are applied to real world case studies to reinforce learning. Participants will apply manufacturing concepts to real world applications.

This course is designed for:

- Project Managers
- Product Managers
- Engineers (Design & Manufacturing)
- Engineering Management
- Finance
- Marketing
- Manufacturing
- Service and Corporate Management

SEER for Manufacturing Electronic Core Course Outline

Day 1

1. Intro to SEER & Basic Concepts
2. Manufacturing Set-Up
3. Running SEER for Manufacturing Common Parameters
4. Fabrication
5. Assembly

Day 2

1. Electrical Assembly
2. PCB Assembly

3. Molding/Casting/Forging Processes
4. Purchased Parts
5. Additional Items

Day 3

1. Machining
2. Finishing
3. Composites

SEER for Manufacturing Electronic Advanced Course Outline

Day 1

1. Intro to SEER & Basic Concepts
2. Developing Custom Knowledge Bases
3. Customizing SEER for Manufacturing
4. Server Mode Scripts
5. Risk & Probability
6. Reports, Charts & Outputs
7. SEER RateMaker
8. Summary

INDUSTRIAL & COMMERCIAL

Schedule

Three (3) Days of Core and One (1) Day of Advanced.

Purpose

Open Workshop on SEER for Manufacturing with a focus on Industrial and Commercial manufacturing.

This workshop teaches the students how to use SEER for Manufacturing software for conducting design for manufacturability analysis, parametric cost estimating, accessing data from other databases, using knowledge bases and creating custom calculations (input parameters, mathematical equations and outputs). The SEER for Manufacturing Basic modules covered will focus on the Part fabrication and assembly component costing, molding (injection, compression and blow molding), machining, finishing's. With composites, electrical and PCB assembly modules added on a as required basis for specific company needs. In addition to instruction on the use of the software, several case studies

are covered during the class to give the students real hands-on experience. Concepts are applied to real world case studies to reinforce learning. Participants will apply manufacturing concepts to real world applications.

This course is designed for:

- Project Managers
- Product Managers
- Engineers (Design & Manufacturing)
- Engineering Management
- Finance
- Marketing
- Manufacturing
- Service and Corporate Management

SEER for Manufacturing Industrial & Commercial Core Course Outline

Day 1

1. Intro to SEER & Basic Concepts
2. Manufacturing Set-up
3. Running SEER for Manufacturing - Example
4. SEER for Manufacturing Common Parameters
5. Fabrication
6. Assembly

Day 2

1. Molding/Casting/Forging Processes
2. Machining
3. Finishing
4. Purchased Parts
5. Additional Items

Day 3

1. Composites
2. Tubing
3. Electrical Assembly
4. PCB Assembly

SEER for Manufacturing Industrial & Commercial Advanced Course Outline

Day 1

1. Intro to SEER & Basic Concepts

2. Developing Custom Knowledge Bases
3. Customizing SEER for Manufacturing
4. Server Mode Scripts
5. Risk & Probability
6. Reports, Charts & Outputs
7. SEER RateMaker
8. Summary

See how past attendees have benefited from our SEER for Manufacturing

Workshop:

- "It provided a good overall look and understanding of a great new tool."
- "Instructor was very familiar with aerospace processes. The right balance was achieved between hands on and presentation material."
- "Applicability to job - used actual projects as estimating examples "Gaining knowledge on estimating parts."
- "The instructor. Joe is very well versed in the subject and a great communicator. I also liked the case studies and any hands on time practicing what we learned. Personally, I retain what I have learned much better through hands on practice."
- "Example trade studies were well thought out and presented."
- "The pace and the instructors interest in helping us when we needed it. The training modules that simulated real life scenarios were very helpful and useful."
- "The class materials were great and the instructor's knowledge of manufacturing processes was beneficial."
- "The in-class exercises were a great way to get in and really use and understand the tool."
- "Ability to do risk analysis."