

# St. Cloud State University

ETS615: Engineering by Design Professional Development  
Onshape Certification by Design  
Spring 2022  
3 Credits

<b>Classroom:</b>	Virtual via Zoom	<b>Day:</b> Mon	<b>Time:</b> 6:00 - 8:05 pm
<b>Instructor:</b>	Brad Fessler, M.ED, National Teacher Effectiveness Coach Kurt Helgeson, St. Cloud State University		
<b>Office Hours:</b>	Wednesday 6:00 – 8:05 pm		
<b>E-mail:</b>	bfessler@pgasd.com		

## Prerequisites

A general knowledge of computers and willingness to acquire rudimentary drafting techniques via on-line tutorials is required for successful course completion.

## Required Materials

Onshape account (<https://www.onshape.com/en/education/>), computer with internet access, dual monitors is recommended but not required.

## Course Description

The Onshape Certification by Design course is broken down into three units that all have five learning cycles, a preliminary challenge, and primary challenge. There is a pretest/posttest besides the actual Onshape Associate Certification Exam and quizzes within most of the learning cycles to assess students' progress throughout the course. Students will complete modeling, assembly, and engineering drawing challenges, and will have the opportunity to work collaboratively while designing their own parts and assemblies. These challenges provide students with practice and in some challenges, emulate the Onshape Associate Certification Exam. (2 hrs. synchronous class, 2 hrs. asynchronous lab per week)

## Course Objectives

Upon completion of this course, students will be able to:

1. Read two dimensional engineering drawings
2. Create two dimensional engineering drawings using Onshape
3. Build three dimensional models of mechanical parts using Onshape
4. Create assembly models that include modeled content and standard content
5. Constrain assembly models so they function as they would in the real world
6. Collaborate with other Onshape users on the same project
7. Share their designs using the file sharing tools within Onshape
8. Quickly solve design challenges using Onshape
9. Be prepared to take the Onshape Certified Associate Exam

## Content Topics

These are the general categories to be covered. ([Full Course Outline](#))

- Technical sketching
- Geometric construction
- Geometric constraints
- Two dimensional sketching
- Three dimensional modeling
- Assembly models
- Engineering drawings
- Collaboration

- Problem solving

## Instructional Process

This highly interactive, hands-on course consists of a blended learning approach, where face-to-face interaction and learning is mixed with independent study via technology. The instructional strategy will consist of: content introduced in class or on-line outside the classroom whereas the students come to class armed with questions and some background knowledge, in-class demonstrations and lectures, and out of class assignments. Various instructional modes, duties and media to be utilized include: class discussions, various readings, video tutorials, mini lectures, quizzes, assignments, and posting of a self-reflection & muddiest point on the topics. These items are intended to test your knowledge about the subject matter, conceptual ability, critical thinking, and communicating your concept intent precisely. If you engage with the course content, with your classmates, and with the instructor, you will undoubtedly learn more.

## Evaluation Methods

Grading rubrics will be provided based on the following criteria:

<b>Objectives</b>	Fulfill assignment/project's requirements
<b>Process</b>	Ability to visualize & execute assignment/project Develop effective solutions Ability to verbalize on work progress
<b>Professionalism</b>	Respectful and good work ethics Active class participation and collaboration Degree of involvement Meet deadlines
<b>Final deliverable</b>	Assignment/Project Presentation Completed and on time
<b>Grading</b>	Categories as follows:

1. Attendance	5%
2. Participation/ Learning Cycle Quizzes	10%
3. Project(s)	65%
4. Posttest/Final	<u>20%</u>
	<b>Total 100%</b>

≥ 94% _____	A	73% to 76.9% _____	C
90% to 93.9% _____	A-	70% to 72.9% _____	C-
87% to 89.9% _____	B+	67% to 69.9% _____	D+
83% to 86.9% _____	B	63% to 66.9% _____	D
80% to 82.9% _____	B-	60% to 62.9% _____	D-
77% to 79.9% _____	C+	< 60% _____	F

## D2L

Electronic materials, resources, syllabus, and other pertinent info will be located in the Buzz learning management system.

## Deadlines

The due-date and instructions for submission of each assignment/project will be communicated when assigned. Projects will be submitted using the comment and assign function within Onshape. Make sure you hit the assign to checkbox after tagging me in the comment.

No late submissions will be accepted after the due date and time.

No make-up exams – Discretionary exceptions may be made for reasons of illness or excused absences.

## Virtual Classroom Expectations

### Courteous and professional behavior

- Be respectful to instructor and peers (during any part of class)
  - Cell phone should be off or set on vibrate and put away.
  - No text messaging
  - No iPods or earbuds unless working on projects after instruction

### Punctual attendance for every class

- Late arrivals and early departures will count as one-half of an unauthorized absence.

### Prepared for class

- Pay attention to instructions and take comprehensive notes
- Required readings, resources and assignments completed on time
- For homework, group work is encouraged, **but do not copy from one another.**
- Active participation in class discussions
- During lecture, feel free to stop me to ask questions or when needing assistance, by simply raising your hand or unmuting your microphone.

## Supplies

### (All are Required)

- Computer with internet access
  - Dual monitor recommended but not required
- Onshape account
- Buzz account
- Zoom account
- Graph paper (1/4" grid) (Can be printed using the provided link)
- Isometric graph paper (1/4" grid) (Can be printed using the provided link)

## Relevant Misc. Info.

### **Academic Integrity**

Academic dishonesty is not tolerated and may result in failure in the course. Onshape tracks all file origination information, versions, sharing, and other analytics.