

**Course Proposal
BMED 3xxx SolidWorks CSWA Certification Prep & Test**

Instructors Martin C. Jacobson

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Office Hours: Open Door and By Appointment (http://martyjacobson.youcanbook.me)

TA: TBD

**1 credit hour class w/ flipped elements** (1500 contact minutes)

**Prerequisites**: BMED 2310

**Location**: BME Basement Computer Lab

**Schedule**: Meets twice a week for 2.5 hours each

**Duration**: 5 weeks

**Learning** **Objectives**:

* Demonstrate mastery of visual design thinking skills (spatial visualization, analysis of forms, deep understanding of Boolean operations on 3 dimensional bodies)
* Build proficiency in highly relevant, highly marketable CAD skills translatable to any solid modeling platform (SolidEdge, Catia, Creo/ProE, SolidWorks, Fusion360, Inventor)
	+ Skills include: reading prints, double-checking detailed design work, creating appropriately toleranced product manufacturing information, building solid models with no defects or errors, assessing mass, volume, surface area, and center of gravity properties in the resulting model
* Build proficiency in the SolidWorks skills necessary to successfully pass the Certified SolidWorks Associate examination. Skills include:
	+ Building complex solid models in Solidworks
	+ Building complex assemblies
	+ Modifying parts which have been produced by others
	+ Reordering the feature history tree for proper work sequence
* Attempt and pass both portions of the Certified SolidWorks Associate examination. (Martin Jacobson is an authorized test administrator for this examination and can provide testing codes to Georgia Tech students free of charge).
* Complete an overview of advanced surface modeling techniques which may be used to produce complex geometry such as that needed to produce orthopedic plates or maxillofacial implants. Skills include:
	+ Overview of direct surface modeling methodology
	+ Overview of loft and indirect surface modeling methodology
* Extra credit: Successfully complete a 3d scan and produce a valid non-uniform rational Bezier spline (NURBS) surface from the resulting point cloud data
* Grading criteria (continued on next page)

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| BMED 3xxx Grading50% Team and 50% Individual Performance | % | Due Date |
| Weekly Homeworks (submitted on Canvas)  | 40% |  |
| Quiz 1: SolidWorks Basics | 10% | Week 1 |
| Quiz 2: Complex Geometry | 10% | Week 2 |
| Quiz 3: Advanced Assembly | 10% | Week 3 |
| Exam: CSWA Pretest | 10% | Week 4 |
| Exam: Official CSWA Exam Part 1\* | 10% | Week 5 |
| Exam: Official CSWA Exam Part 2\* | 10% | Week 5 |
| 3d Scanning to NURBS Extra Credit | 5% |  Week 5 |
| Total (not including extra credit) | 100% |  |

\* The student will receive their actual grade as earned on the CSWA exam for the relevant portion of this course grade (20%).

In the event that a student fails the officially proctored CSWA exam, they may re-take the CSWA exam 30 days after the initial attempt.

**If the student re-takes the CSWA exam and earns a passing grade before final grades are due for this course, their grade may be replaced with the grade earned on their second attempt.**