

# Certification Document 3:

## Portfolio/Engineering Notebook & Equipment Guide

<b>Levels of Assessment</b>	<b>Interpretation of Level</b>
4 – Excellent	Exceeds program standards.
3 – Good	Meets program standards. No need for additional technical assistance at this time, although some areas, as indicated, could be improved.
2 – Needs Improvement	Generally falls below program standards. Demonstrates limited effectiveness; additional technical assistance and/or resource utilization is needed for improvement.
1 – Poor or Missing	Evidences little or no effectiveness. A great deal of technical assistance and/or resource utilization would be an immediate need.
N/A – Not Applicable	Does not apply to the program being reviewed.

**I. Student Portfolios/engineering notebooks should contain evidence of:**

<b>A. Introduction to Engineering Design (IED)</b>	1	2	3	4	N/A
Freehand sketches					
Design process being followed					
Group project with brainstorming technique					
Project Management					
Reverse engineering project					
Scale model of design solution					
Computer generated technical drawings (i.e.: isometrics, play equipment, train)					
<b>B. Principles Of Engineering (POE)</b>					
Sketches for marble sorter and ballistic device					
Technical writing samples (i.e.: engineer interview)					
Project Management (i.e.: ballistic device, marble sorter)					
Power point sample (i.e.: engineer college research)					
Word problem solutions (i.e.: stress, strain, tension)					
Materials testing technical report (sample & analysis with graphs)					
Career research project					
Fischertechnik programming (i.e.: marble sorter)					
<b>C. Digital Electronics (DE)</b>					
Breadboarded circuits or pictures (i.e.: series & parallel, birthday problem)					
Computer simulated circuits					
Boolean algebra simplification & truth tables					
KMapping					
Number System Conversions (i.e.: binary to hex to..)					

<b>D. Aerospace Engineering (AE)</b>	1	2	3	4	N/A
Aerospace history technical report					
Lift & drag mathematical calculations					
Copy of airfoil data spreadsheet (Activity 2.1.1)					
Glider flight test data (Activity 3.1.6)					
GPS waypoint identification table (Activity 3.2.1)					
Model rocket launch & altitude data table					
Positive Gforce experiment testing procedure					
Microgravity drop tower experiment sketches & procedures					
Composite plastic samples test data sheets, Young's modulus calculations					
Thermal protection test data sheets					
<b>E. Biotechnical Engineering (BE)</b>					
Instrument calibration.xls					
Bioethics survey data					
Hand drawn sketches of DNS model					
Rapid pathogen identification final report					
CSI forensic technique final paper					
Yeast mobile design sketches & competition results					
Aquaponics experiment data table					
Documentation of joint model prototype designs					
<b>F. Civil Engineering and Architecture (CEA)</b>					
Design process sketches (i.e.: cabin, big project)					
Group work notes (big project)					
Project Management (i.e.: big project)					
Project calculations for loads, building systems, runoff (i.e.: samples & big project calculations)					
Project research for codes, restrictions					
Computer generated drawings of design projects					
<b>G. Computer Integrated Manufacturing (CIM)</b>					
Project management (i.e.: soap mold, sumo cars)					
Design sketches					
Computer simulation of milled project (i.e.: soap mold)					
Milled project (i.e.: soap mold, box & lid)					
Coordinate geometry examples (i.e.: initials)					
CNC programming sample					
Handshaking program (i.e.: palletizing routine)					
Fischertechnik programming (i.e.: limit switches on track)					
<b>H. Engineering Design and Development (EDD)</b>					
Progress from initial idea conception to prototype testing					
Final presentation ppt					
Patent research, design sketches, input from experts, technical drawings, working prototype, prototype testing & analysis					

## II. Equipment

Overall	1	2	3	4	N/A
Appropriate software for the courses offered					
Digital Cameras					
<b>A. Introduction to Engineering Design (IED)</b>					
Computers for each student enrolled					
Printer and/or plotter capability equipment					
Dial calipers					
<b>B. Principles Of Engineering (POE)</b>					
Computers for each student enrolled					
Printer capability equipment					
Fischertechnik equipment (adequate for enrollment)					
Trainers and/or Economatics					
Tensile/Stress Analyzer & materials samples					
Digimatic Mini-Processor & Caliper					
<b>C. Digital Electronics (DE)</b>					
Computers for each student enrolled					
Printer capability equipment					
Oscilloscope					
PLD programmer (i.e.: EMP 100)					
Breadboards, integrated circuit components, wires					
Multi testers, soldering irons					
Boe-Bot Kits					
<b>D. Aerospace Engineering (AE)</b>					
Computers for each student enrolled					
Printer capability equipment					
Wind tunnel					
Foam cutters					
Garmin GPS units					
Engine thrust measurement device					
Positive Gforce experiment apparatus					
FT kits for the class					
Propane torches & chemical goggles					
Boe-bot equipment					
<b>E. Biotechnical Engineering (BE)</b>					
Computers for each student enrolled					
Printer capability equipment					
Microcentrifuge					
Assorted science experiment glassware					
Microscope, triple beam balance					
Aquarium					
Plastic skulls					
Proscope HR basic kit					

<b>F. Civil Engineering and Architecture (CEA)</b>	1	2	3	4	N/A
Computers for each student enrolled					
Printer and plotter equipment					
Surveying equipment					
Soil testing sieves					
<b>G. Computer Integrated Manufacturing (CIM)</b>					
Computers for each student enrolled					
Printer equipment					
Robot arm					
CNC Mill					
Fischertechnik equipment (adequate for enrollment)					
Milling material (i.e.: wax, butterboard, solid lam					
<b>H. Engineering Design and Development (EDD)</b>					
Computers for each student enrolled					
Printer equipment					
Final presentation room					
Testing of prototype or off campus access					