

Points of Interest and Clarification: Metrology (The science of measurement)

What are the degree and certificate options offered by your Program?

- **Metrology Mini-Skills Certificate**
- **Metrology Certificate**
- **Manufacturing Tech AS – Machine Technology Concentration**

For more information:

- FC Catalog: <https://www.fullcoll.edu/schedule/>
- FC CTE website: <https://cte.fullcoll.edu/>
- [Quality Magazine's article about FC's Metrology Program](#)
- [Metrology: An Occupation for Future Growth](#)

Best class to take to explore the major:

MACH 180, Introduction to Metrology. This course is required for the series of classes that we offer for metrology and gives a good overview of the basics. MACH 101 or MACH116 are advisory for MACH 180. MACH 182 is also a co-req for MACH 180.

Students unfamiliar with Trigonometry, basic blueprint reading, drafting and drawing concepts and basic machining concepts are advised to take Math 142 or Tech 081, DRAF 101, DRAF 173, and MACH 101 or MACH 116 before beginning MACH 180 and MACH 182.

What job/career opportunities do your degrees and certificates prepare students for? (Stories of student successes and struggles are always helpful)

Our program prepares students for a field in Quality Engineering- quality assurance, quality control, and inspection are some of the most common. Our program provides a cost-effective and more manageable pace for students to learn and get hands on practice with CMM programming and reverse engineering. These are some of the most competitive offerings that we have, especially since the course is built in conjunction with Hexagon University. The students receive the same certificate that they would if they completed the course through Hexagon for a fraction of the price and over the course of 16 weeks (rather than the 1-week intensive course they provide).

Many of my students are current inspectors but due to production limitations, do not have any time to practice with a CMM or Romer Arm. Our program gives students their own arm and/or CMM to work on during the lab portion of the course.

What are the occupational outlooks for these job/career opportunities in Orange County?

A quick search on Indeed shows 46 quality positions open with salaries up to \$45 an hour.

How do you explain the benefits of a certificate or associates degree when the student is also planning to earn a Bachelor's degree?

Our certificate program is a great way to supplement a Bachelor's degree because it provides the student with a hands-on experience that is hard to get. If looking at something like a mechanical engineering degree, it gives the student the cradle-grave design experience to be a better designer by showing how inspection is tied to the drawing and design.

What permits or certifications are available to your students and what help do they provide?

Fullerton College provides two certificates- one mini certificate just for the metrology courses and then a larger certificate that gives the student the full, engineering package from design, manufacturing to inspection. Two of the metrology courses provide a Hexagon certificate that is equivalent to taking the Arms 101 course or the CMM 101 course.

What student populations are your degrees and certificates most appropriate for? For example, are certain certificates more suitable for students who already have a degree?

Our certificates are appropriate for any student but are especially synergistic with Fullerton College's design and manufacturing courses.

What partnerships do you have with the community and how can those partnerships assist students with networking and career placement?

Fullerton College has a very close relationship with Hexagon and Orange County Manufacturing businesses. We have employers that are interested in coming in and speaking with our students and then placing them in competitive, salary and hourly positions. This relationship has helped our students find employers when they are looking and strengthen their ability to advance in their current positions.

What websites do you direct students to for employment purposes?

We typically host employers' profiles in the machine shops (based on our relationships with local businesses). Indeed and Monster are also options, but we feel that having a direct relationship with the company helps to better place our students.

If you were an academic counselor, what additional advice would you provide a student interested in your programs?

I would say that any student who is interested in mechanical, manufacturing or quality engineering would greatly benefit from our program since it rounds out the entire design and

manufacturing process. All of the pieces are important to be a better designer, machinist or inspector. Learning the various aspects of metrology starting with basic hand tools, culminating in our reverse engineering and scanning class, is a fun way to see how the technology can be used in tandem with our 3D printer, giving students a tangible link to something fun and exciting, while advancing their skill set.

Transfer Considerations:

Students working in the field prior to transfer have the potential of having their bachelors degree funded by their employer.

Best Faculty to Contact:

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Machine Tech Faculty & Program Coordinator
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Machine Tech Adjunct Faculty
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**Metrology Mini Skills Certificate
Suggested Sequence**

Semester 1 (Advisories)

MACH 116 or 101

DRAF 101

(student ideally also has a Trigonometry background (Math 142 or Tech 081) and DRAF 173 before starting Metrology courses)

Semester 2

MACH 180

MACH 182

DRAF 173

Semester 3

MACH 184

MACH 185