



COLTON REDLANDS YUCAIPA
REGIONAL OCCUPATIONAL PROGRAM
Inspiring Possibilities

2017-2018
Advanced Manufacturing 2
Advisory

Manufacturing Day



2016

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Industry Advisors

Paul L., Instructor, NTMA Training Center

Tracee T., Customer Fulfillment, Sorenson Engineering

Angie N., Human Resources Manager, Sorenson Engineering

Paul M., Business Manager, Ironworkers Local 433

Bryan S., Organizer, Plumbers and Pipefitters Local 364

Molly D., Engineer Integration Manager, Boeing

Curriculum Review by Unit

Unit 1– Suggested adding written communication to competency E regarding conflict resolution as many conflicts arise due to miscommunication occurring regularly through email.

Unit 2– Well covered.

Unit 3– Well covered.

Unit 4– Good content no suggestions.

Unit 5– Suggested adding proper lifting and eye washing procedures as these are two areas of high injury in the industry. However, advisors felt these may be covered in some of the competencies listed, just not specifically stated.

Unit 6 – Stated all competencies are excellent, however, advisors felt that an additional competency on troubleshooting, understanding the importance of accuracy or proper performance should be added to this unit.

Unit 7 – No Suggestions for competencies. However, advisors did review related key assignment 3 and felt that there may be safety issues with powering the catapult with steam instead of pneumatics, also questioned where the testing of catapults would take place and how they would get all the equipment needed to the location. Suggested scaling the project to be completed in a classroom setting.

Unit 8 – No Suggestions. Advisors mentioned that the term ladder is not used as frequently in industry because it is incorporated into PLC software.

Unit 9 – No Suggestions.

Unit 10 – No Suggestions.

Unit 11 – No Suggestions.

Unit 12 – In competency A change the word fee to feed and in competency B change subprograms to canned cycle.

2017-2018 Advanced Manufacturing 2 Advisory (1/30/2017)

To validate the new Advanced Manufacturing 2 curriculum, CRY-ROP educators met with Manufacturing and Product Development industry and educational partners. Discussion topics at this advisory meeting focused on workforce trends, hiring practices, entry level skills, and training and certification requirements for students who have knowledge and experience in the manufacturing process.

Question 1

What does your hiring process look like?

Question 2

What interpersonal skills are lacking in today's workforce?

Question 3

What foundational skills are necessary for entry level positions within your industry?

Question 4

What skills/knowledge is being required of new employees to address the latest trends in technology, equipment, regulations, laws, etc.?

Question 5

What skills have become obsolete in your industry due to changes in technology, equipment, regulations, laws, etc.?

Question 6

What types of training, education, certifications, or credentials are desirable for entry level positions in your field?



Manufacturing and Product Development

Question 1: What does your hiring process look like?

Applications are submitted online through Boeing's career website for open requisitions. (Note: A PDF or Word Document cannot be submitted as a resume; all applications for requisitions are pre-determined fields that you fill in based on the information from your resume.) If this electronic application is selected, there will be a follow-up application to fill out in greater detail (I believe at this point, a PDF/Word resume can be submitted). Thereafter, either an in-person or phone interview may be scheduled. Afterward, you will receive confirmation that you have been awarded the position (I do not know if they inform you if you did not receive it.)

Candidates submit a resume and then complete an application. Once selected the candidate will take two tests one for personality and one for intelligence, which will assist Sorenson in seeing which type of position would be the best fit for the candidate. Once hired they must complete a three month trial period.

Applications for apprenticeships are accepted at the locals and usually require a high school diploma as apprentices are trained on the job to gain more experience and receive pay increases and added responsibilities.

Question 2: What interpersonal skills are lacking in today's workforce?

The ability to solve problems, lack of motivation, punctuality, and not dressing appropriately. New hires also tend to lack the initiative to seek answers for questions or to communicate openly making teamwork difficult.

Question 3: What foundational skills are necessary for entry level positions within your industry?

First and foremost, you need to have a Bachelor's degree in engineering or STEM. This is a minimum. Thereafter, entry level positions require a combination of experience and skills. This experience does not necessarily need to be related to the job, but that does help (i.e. research lab experience, STEM clubs and projects, internships). What's more relevant are the skills obtained from this experience. For example: adaptability, leadership, being able to work with a team, being able to work independently, being able to take direction from superiors, communications skills (verbal and written), conflict resolution, integrity, efficiency, forward-thinking, self-improvement.

A keen eye for detail and spatial awareness along with a clear understanding of how machinery works. Candidates need to be able to think in a 3 dimensional perspective and have excellent mathematical skills measuring using micrometers and digital calipers. Knowledge of shaft and bearing tolerance.

Excellent work ethic, reading, writing and math skills and the ability and willingness to learn new skills as needed to progress in the trade. Most trades are physically demanding and require employees to be physically fit with good hand, eye coordination.

Question 4: What skills/knowledge is being required of new employees to address the latest trends in technology, equipment, regulations, laws, etc.?

Leadership has been the most critical skill that employers are looking for. Companies are interested in hiring someone who they believe will lead change and improvement in technology/equipment/etc. Having a technical background in these areas is a plus, but each of these areas is specific to the position, and the majority of that knowledge will be transferred on the job. If you can demonstrate in an interview or on a resume that you have leadership skills and experience, this will increase your chances of being hired.

Time management is one of the most important skills new employees can have, as without it production will not meet deadlines. Knowledge of basic and advanced measurements and the ability to convert between standard and metric easily. Sorenson uses Auto Desk and Auto Desk Fusion 360 and new hires need to be well versed in computer software and programs as many to increase production non-computer operated machinery is being converted.

With apprenticeships it is helpful to come in with some previous knowledge of the trade, however because we train while you work we will train new apprentices on new technology, equipment and regulations as they become available in the industry.

Question 5: What skills have become obsolete in your industry due to changes in technology, equipment, regulations, laws, etc.?

The only skill I can think of is, specifically, the ability to create engineering drawings on paper. Drafting classes are still taught at some universities, and do present tremendous value in terms of learning how to design and prototype. However, this specific skill is no longer used because everything is done using 3D modeling and computers. Regardless, having the skill in your back packet can be helpful as a reference.

Rockwell PLC and Ladder Logic, manual measurement tools, and manual processes are becoming obsolete and being replaced by automation to increase production. New technologies common in the industry are Twin Cat-c by Beckhoff, robotic arm systems, lasers, chemical processing and plating.

Question 6: What types of training, education, certifications, or credentials are desirable for entry level positions in your field?

Certifications commonly earned for entry level positions are: Into to Solidworks, Nim, HVAC, and CNC.

Again, minimum educational requirement is a Bachelor's degree in engineering or STEM. Training includes having some kind of work experience and the skills previously mentioned. There are additional certifications/credentials that are helpful to other jobs in my field (not mine position specifically). For other positions, completing an FE exam (Fundamental Engineering) related to your specific major is very useful, and required by some companies. For positions like mine, having completed a minor in business was not required, but did contribute significantly to a large portion of the work that I perform daily. I would recommend for any job at all to complete a minor in business (perhaps even double-major) because the content taught at that level is universally applicable to all entry-level positions (and sets you apart from most other applicants who have a single major).

Twin Cat-3 by Beckhoff training, NTMA Training Centers, and TET are some of the more notable training centers in the area that Sorenson works with. However, for entry level positions hands on experience with tools and machines, certification in programing codes, Auto Desk Certification, and experience with geometric dimensioning and tolerance would be very beneficial to someone looking to get into the manufacturing industry.

Machinists

State and National Trends

United States	Employment		Percent Change	<u>Projected Annual Job Openings</u> ¹
	2014	2024		
Machinists	399,700	438,900	+10%	15,470
California	Employment		Percent Change	<u>Projected Annual Job Openings</u> ¹
	2014	2024		
Machinists	33,800	40,200	+19%	1,620

Industrial Machinery Mechanics

State and National Trends

United States	Employment		Percent Change	<u>Projected Annual Job Openings</u> ¹
	2014	2024		
Industrial Machinery Mechanics	332,200	391,900	+18%	14,590
California	Employment		Percent Change	<u>Projected Annual Job Openings</u> ¹
	2014	2024		
Industrial Machinery Mechanics	24,400	30,600	+25%	1,250

Industrial Engineer

State and National Trends

United States	Employment		Percent Change	<u>Projected Annual Job Openings</u> ¹
	2014	2024		
Industrial Engineers	241,100	243,200	+1%	7,280
California	Employment		Percent Change	<u>Projected Annual Job Openings</u> ¹
	2014	2024		
Industrial Engineers	24,700	27,200	+10%	980

Industrial Engineer Technicians

State and National Trends

United States	Employment		Percent Change	Projected Annual Job Openings ¹
	2014	2024		
Industrial Engineering Technicians	66,500	63,500	-5%	1,630
California	Employment		Percent Change	Projected Annual Job Openings ¹
	2014	2024		
Industrial Engineering Technicians	4,100	4,400	+7%	130

Manufacturing Engineers

State and National Trends

United States	Employment		Percent Change	Projected Annual Job Openings ¹
	2014	2024		
Engineers, All Other	136,900	142,300	+4%	3,300
California	Employment		Percent Change	Projected Annual Job Openings ¹
	2014	2024		
Engineers, All Other	18,500	21,100	+14%	630

Engineering Technicians

State and National Trends

United States	Employment		Percent Change	Projected Annual Job Openings ¹
	2014	2024		
Engineering Technicians, Except Drafters, All Other	70,100	69,900	0%	1,710
California	Employment		Percent Change	Projected Annual Job Openings ¹
	2014	2024		
Engineering Technicians, Except Drafters, All Other	9,200	10,200	+11%	320

Commercial and Industrial Designers: California

State and National Trends

United States	Employment		Percent Change	<u>Projected Annual Job Openings</u> ¹
	2014	2024		
Commercial and Industrial Designers	38,400	39,200	+2%	990
California	Employment		Percent Change	<u>Projected Annual Job Openings</u> ¹
	2014	2024		
Commercial and Industrial Designers	5,300	5,600	+6%	160