

Advanced Manufacturing Engineering Technologist and Technician

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Submitter's Information

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**Title** Professor of Engineering and Manufacturing

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**Extension** n/a

**Region** Los Angeles/Orange County

**College** East LA College

**CTE Dean** Mercy Yanez

**CTE Dean Email** [yanezm@elac.edu \(mailto:yanezm@elac.edu\)](mailto:yanezm@elac.edu)

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Program Information

**Program Name** Advanced Manufacturing Engineering Technologist and Technician

<b>Projected Start Date</b>	2019-02-05
<b>Program Type(s)</b>	Certificate of Achievement 18+ Semester (27+ Quarter) Units Associate of Science Degree
<b>Certificate Required Units</b>	24
<b>Units of Major Degree</b>	24
<b>Total Units for Degree</b>	61
<b>TOPs Code</b>	Engineering Technology, General (requires Trigonometry) (092400)
<b>Program Goals</b>	<p>As Manufacturing is evolving from a highly labor-intensive process to an increasingly sophisticated set of new technological processes, California Community Colleges have to build Guided Pathways and fill the pipeline of highly skilled employees. Many of the new occupations in advanced manufacturing require workers to be skilled in use of sophisticated equipment such as Laser Scanning, 3D printing of Plastics and Metals, use Coordinate Measuring Machines and CNC programming –Operator in addition to Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM).</p> <p>To accommodate and to train the workforce in these high growth and high demand technologies, a stackable Certificate program without any prerequisite is developed in Engineering Technology Discipline. This program is mapped to the skills and knowledge as described in SOC 17-3029 of Bureau of Labor Statistics. Upon completion of the Certificate Of Achievement, the rigor of the program is intensified to the standards of Accreditation Board of Engineering and Technology (ABET), which has the requirement of Calculus, Physics and Chemistry for the completion of Associate of Science Degree. One of the</p>

integral part of the program is a Capstone course for the needed Hands-On skills and Strong Workforce Apprenticeship Program (SWAG) to ease the placement and employment of the certificate completers. This Advanced Manufacturing program is funded through the round one of the Strong Workforce Program.

### **Program Description**

The Advanced Manufacturing Engineering Technologist and Technician program is designed to train the students and workforce in high growth and high demand technologies such as; Laser Scanning, 3D printing of Plastics and Metals, use Coordinate Measuring Machines and CNC programming –Operator in addition to Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM). The program offers hands-on experience to become technicians who are able to help analyze, design, and manufacture products, to communicate professionally both orally and in writing, and to work on team-based project.

The Certification of Achievement and/or Associate Degree in Science will be awarded upon successful completion of required courses.

### **Program Requirements**

- Skill Certificate Courses (9 units)  
EGD-TEK 102, Engineering Graphics for Technologists with GD&T (Drafting & AutoCAD), 3-unit  
EGD-TEK 121, Computer Aided Design - 3D SolidWorks, 2-unit  
IND-TEK 103, Technical Writing & Communication, 2-unit  
IND-TEK 106, Shop Math, 1-unit  
\*IND-TEK, Orientation to OSHA Tool & Shop safety, 1-unit
- Certificate of Achievement Core Course (8 units)  
EGD-TEK 131, CAD Advance Applications (EGD-131), 1-unit, Optional  
IND-TEK 105, Print Reading with GD&T, 2-unit  
\*MIT 202, Manufacturing Processes – Metals, 1.5-unit  
\*MIT 203, Manufacturing Processes - Non-Metals, 1.5-unit  
\*MIT 204, Traditional Manufacturing - Lathe, Mills,

Welding, Cutting, 2-unit  
 - Certificate of Achievement Electives (Choose 2 courses, sequential)  
 \*ENG-TEK, CNC Operator I (HAAS/Fanuc), 2-unit  
 \*ENG-TEK, CNC Operator II (HAAS/Fanuc), 2-unit  
 \*ENG-TEK, CNC Programmer I (MasterCAM), 2-unit  
 \*ENG-TEK, CNC Programmer II (MasterCAM), 2-unit  
 \*ENG-TEK, Digital Manufacturing I, 2-unit, Optional  
 \*ENG-TEK, Digital Manufacturing II, 2-unit, Optional  
 \*ENG-TEK, Non-Destructive Testing / Inspection (NDI/T), 2-unit, Optional  
 \*ENG-TEK, Capstone Course, 2-unit, Optional  
 - Associate of Science Required Courses, 16 Units  
 \*ENG-TEK, Introduction to Engineering Technology, 3-unit  
 \*ENG-TEK, Applied Statics and Materials, 3-unit  
 \*C-ID EET, Basic Electronics & Lab with PLC or LabVIEW 3  
 C-ID MATH 145 Calculus for Technologists, 3-unit  
 C-ID PHYS 105 General Physics for Science, 3-unit  
 General Education Courses, 21 Units  
 \* New Course in Progress

**Program Projections** 40-45 Local Skill Certificate  
 30-35 Certificate Of Achievement  
 5-10 Associate of Science

**Labor Market Information** [Download COE-Advanced Manufacturing-02-2014.pdf \(/storage/lmi/174--COE-Advanced Manufacturing-02-2014.pdf\)](#)

[Download COE-Advanced Manufacturing Occupations-03-2016.pdf \(/storage/lmi/174-158-COE-Advanced Manufacturing Occupations-03-2016.pdf\)](#)

**Created At** 02/01/18 - 03:02 PM

**Status**

**Recommended**

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Los Angeles/Orange County Region Specific Questions

<b>District</b>	Los Angeles Community College District (LACCD)
<b>College</b>	East Los Angeles Community College (ELAC)
<b>CRLC Member</b>	Mercy Yanez
<b>Email</b>	Yanezm@elac.edu
<b>Phone</b>	323.265.8610
<b>Reason for approval request</b>	New Program
<b>Place of program in college's curriculum/similar program</b>	Engineering Technology
<b>Similar programs at other colleges in the Los Angeles and Orange County Region</b>	Pasadena City College Glendale Community College LA Trade Tech College Mt. San Antonio College
<b>Annual Enrollment projects (non-duplicative)</b>	40-45 Local Skill Certificate 30-35 Certificate of Achievement 5-10 Associate Degree
<b>Advisory Minutes</b>	<u><a href="#">Download 2017 Minutes ET Department Final.pdf (/storage/Los Angeles/Orange County/174-158-419-2017 Minutes ET Department Final.pdf)</a></u>



# Advanced Manufacturing Occupations

March 2016

Prepared by Center of Excellence for Labor Market Research

Los Angeles County

## Current and Future Employment

Advanced manufacturing encompasses occupations with different skill, training and education levels. This data sheet classifies these occupations into three groups: low-level training, primary, and pathway occupations.

Low-level training occupations include jobs that do not entail much training or formal education. These jobs usually require a high school diploma or equivalent, and have median hourly earnings of \$15.58. In Los Angeles County, these jobs are expected to decline by 7% over the next five years.

**Table 1 – Low-Level Training Advanced Manufacturing Occupations (by 2015 jobs)**

SOC	Description	2015 Jobs	2020 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Hourly Earnings
49-9071	Maintenance and Repair Workers, General	34,247	36,067	1,820	5%	1,044	\$19.09
51-2092	Team Assemblers	21,682	20,526	(1,156)	(5%)	353	\$12.13
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	16,397	16,054	(343)	(2%)	381	\$17.80
51-9111	Packaging and Filling Machine Operators	12,578	12,306	(272)	(2%)	301	\$11.34
51-2099	Assemblers and Fabricators, All Other	6,183	6,214	31	1%	119	\$13.66
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal	4,074	3,658	(416)	(10%)	33	\$12.73
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	3,844	3,905	61	2%	125	\$17.49
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	3,396	3,144	(252)	(7%)	90	\$13.31
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	3,153	2,614	(539)	(17%)	33	\$11.70
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2,815	2,454	(361)	(13%)	57	\$13.90
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	2,651	2,398	(253)	(10%)	45	\$13.13
51-2041	Structural Metal Fabricators and Fitters	2,273	2,134	(139)	(6%)	89	\$17.48
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2,025	1,781	(244)	(12%)	36	\$19.25
51-9196	Paper Goods Machine Setters, Operators, and Tenders	1,760	1,381	(379)	(22%)	13	\$14.01
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	1,750	1,670	(80)	(5%)	32	\$17.50
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	1,460	1,233	(227)	(16%)	25	\$13.19
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	1,248	1,156	(92)	(7%)	40	\$15.24
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	1,096	1,159	63	6%	31	\$22.14
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	905	830	(75)	(8%)	16	\$16.00

51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	845	755	(90)	(11%)	15	\$13.54
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	818	834	16	2%	32	\$21.63
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	814	736	(78)	(10%)	15	\$19.19
51-9191	Adhesive Bonding Machine Operators and Tenders	492	413	(79)	(16%)	10	\$12.98
<b>Totals</b>		<b>126,507</b>	<b>123,423</b>	<b>(3,084)</b>	<b>(7%)</b>	<b>2,936</b>	<b>\$15.58</b>

Source: EMSI Employment Data – 2015.4

Primary occupations include advanced manufacturing jobs that require more training and more education. Most of these jobs require an associate degree or other postsecondary award and more work experience. Median hourly earnings for these occupations are \$25.29. There are expected to be fewer primary occupation jobs in 2020 than there were in 2015, with a decline rate of 1%.

**Table 2 – Primary Advanced Manufacturing Occupations (by 2015 jobs)**

SOC	Description	2015 Jobs	2020 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Hourly Earnings
47-2111	Electricians	14,750	15,191	441	3%	370	\$26.36
51-4041	Machinists	9,991	10,077	86	1%	263	\$16.55
51-4121	Welders, Cutters, Solderers, and Brazers	7,599	7,304	(295)	(4%)	189	\$16.97
49-9041	Industrial Machinery Mechanics	6,607	6,805	198	3%	236	\$28.00
49-3011	Aircraft Mechanics and Service Technicians	4,718	4,828	110	2%	153	\$33.45
17-3023	Electrical and Electronics Engineering Technicians	4,126	3,983	(143)	(3%)	89	\$29.64
47-2211	Sheet Metal Workers	2,721	2,728	7	0%	58	\$27.54
49-9043	Maintenance Workers, Machinery	2,588	2,537	(51)	(2%)	37	\$18.80
17-3027	Mechanical Engineering Technicians	1,264	1,226	(38)	(3%)	27	\$28.07
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	1,258	1,211	(47)	(4%)	32	\$13.56
17-3026	Industrial Engineering Technicians	1,165	1,113	(52)	(4%)	24	\$29.12
17-3013	Mechanical Drafters	1,092	1,053	(39)	(4%)	14	\$24.12
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	776	831	55	7%	33	\$28.96
17-3021	Aerospace Engineering and Operations Technicians	667	629	(38)	(6%)	14	\$34.98
17-3024	Electro-Mechanical Technicians	419	392	(27)	(6%)	8	\$21.12
51-8091	Chemical Plant and System Operators	303	293	(10)	(3%)	11	\$27.39
<b>Totals</b>		<b>60,044</b>	<b>60,201</b>	<b>157</b>	<b>(1%)</b>	<b>1558</b>	<b>\$25.29</b>

Source: EMSI Employment Data – 2015.4

Pathway occupations are jobs that require a four-year degree. Median hourly earnings for these occupations are \$45.94. There are expected to be 2,085 fewer jobs in 2020 than there were in 2015, which is a 3% decline.

**Table 3 – Pathway Advanced Manufacturing Occupations (by 2015 jobs)**

SOC	Description	2015 Jobs	2020 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Hourly Earnings
51-1011	First-Line Supervisors of Production and Operating Workers	17,702	16,541	(1,161)	(7%)	246	\$24.39
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	10,697	11,028	331	3%	360	\$34.19
17-2141	Mechanical Engineers	7,028	6,889	(139)	(2%)	243	\$45.03
17-2072	Electronics Engineers, Except Computer	6,738	6,587	(151)	(2%)	150	\$49.48
17-2112	Industrial Engineers	6,726	6,466	(260)	(4%)	197	\$46.83
11-9041	Architectural and Engineering Managers	6,690	6,600	(90)	(1%)	170	\$71.23
11-3051	Industrial Production Managers	5,314	4,819	(495)	(9%)	90	\$45.23
17-2071	Electrical Engineers	5,073	4,953	(120)	(2%)	114	\$51.10
<b>Totals</b>		<b>65,967</b>	<b>63,882</b>	<b>(2,085)</b>	<b>(3%)</b>	<b>1,570</b>	<b>\$45.94</b>

Source: EMSI Employment Data – 2015.4

### Top Employers and Skills for Primary Advanced Manufacturing Occupations

In 2015, there were a total of 5,305 job postings for primary advanced manufacturing jobs in Los Angeles County. Table 4 lists the top employers for these job postings within the county.

**Table 4 – Job Postings by Top Employers for Primary Advanced Manufacturing Occupations (n=5,305)**

Employers	Number of Job Postings, Full Year 2015
SpaceX	82
Northrop Grumman	79
Homeadvisor	74
CLP Resources Incorporated	36
R&E Automated Systems	32
Alcoa	29
Honeywell	26
JT3	20
Jacobs Engineering Group Incorporated	19
Gulfstream Aerospace	18
Tops	17
Parsons Brinckerhoff	16
Crane Company	15
Butler America	14
University of Southern California	14
Amtec	13
Precision Castparts	13
General Dynamics	12
Sharf Woodward & Associates Incorporated	12

Source: Burning Glass

Table 5 lists the top 20 skills mentioned in job postings for primary advanced manufacturing occupations. The most highly sought skills include repair, machining, inspection, CNC and blueprints.



**Table 5 – Top Skills by Employer Job Postings (n=5,305)**

Skills	Number of Job Postings
Repair	1,226
Machining	938
Inspection	900
Computer Numerical Control (CNC)	763
Blueprints	757
Electrical Work	631
Hand Tools	609
Welding	579
Lathes	572
Schematic Diagrams	491
Mathematics	485
Computer Aided Drafting/Design (CAD)	470
Test Equipment	365
AutoCAD	355
Machinery	322
Power Tools	311
Dimensions	295
Wiring	284
Micrometers	273
Calipers	270

Source: Burning Glass

## Educational Programs

Currently, there are 16 community colleges in Los Angeles County that prepare students for the advanced manufacturing field. In the last three years, 1,115 awards (average) have been conferred.

Table 5 displays the breakdown of program type for the related community college programs.

**Table 6 – Student Completions in Los Angeles County (by Program)**

Program Type	Annual 2012-2013	Annual 2013-2014	Annual 2014-2015	3-Year Average
Aeronautical and Aviation Technology-095000	98	46	16	53
Aviation Airframe Mechanics-095010	80	75	80	78
Aviation Powerplant Mechanics-095020	28	29	28	28
Computer Electronics-093410	25	55	39	40
Drafting Technology-095300	114	178	160	151
Electrical, Electronic, and Electro-Mechanical Drafting-095330	3	3	5	4
Electrical-095220	135	143	131	136
Electronics and Electric Technology-093400	247	182	185	205
Engineering Technology, General (requires Trigonometry)-092400	1	100	118	73
Industrial Electronics-093420	0	0	1	0
Industrial Systems Technology and Maintenance-094500	68	73	56	66

Laboratory Science Technology-095500	19	9	13	14
Machining and Machine Tools-095630	95	113	76	95
Manufacturing and Industrial Technology-095600	10	30	50	30
Mechanical Drafting-095340	18	26	15	20
Sheet Metal and Structural Metal-095640	8	5	6	6
Welding Technology-095650	125	83	142	117
<b>Total / Average</b>	<b>1,074</b>	<b>1,150</b>	<b>1,121</b>	<b>1,115</b>

Source: [www.datamart.cccco.edu](http://www.datamart.cccco.edu)



## Advanced Manufacturing

Los Angeles County, Orange County & Central Valley

### The Bottom Line

The advanced manufacturing sector in Los Angeles County, Orange County, and the Central Valley was studied to better understand the demand for skilled workers, job requirements, and skill gaps. 392 advanced manufacturing employers participated in the study and reported employing 3,788 individuals in the 8 occupations studied within this career fact sheet. These employers projected an increase of 1,797 new jobs over the next five years, with a growth rate of 47%. As automation and digital supply chain management become standard across manufacturing companies, advanced manufacturing will continue to evolve and become more complex. Top trends in advanced manufacturing impacting the workforce include automation, 3-D printing, and high-speed machining.

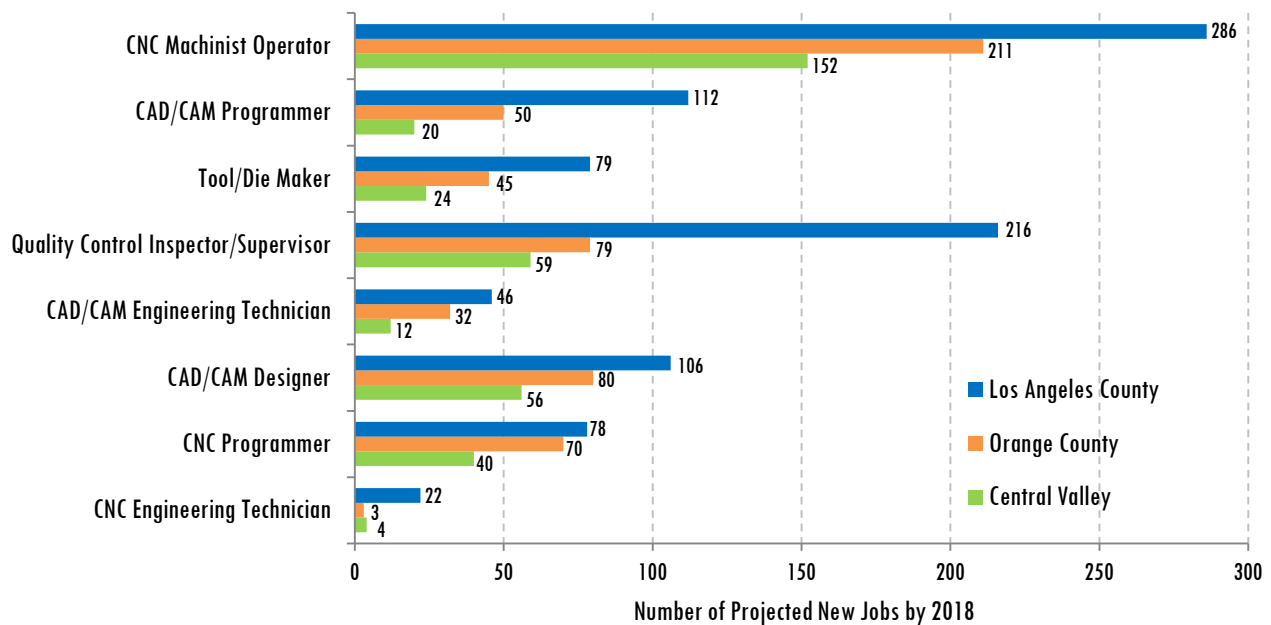
Employers identified multi-axis machines (54%) and lasers (19%) as the most used machinery within their companies.

## Occupational Outlook

Occupation	# of Current Employees	5-Year Job Growth	% Growth Rate
CNC Machinist Operator	1,225	653	53%
CAD/CAM Programmer	550	90	16%
Tool/Die Maker	452	149	33%
Quality Control Inspector/Supervisor	609	357	59%
CAD/CAM Engineering Technician	146	90	62%
CAD/CAM Designer	434	242	56%
CNC Programmer	319	186	58%
CNC Engineering Technician	53	29	55%
<b>Total</b>	<b>3,788</b>	<b>1,796</b>	<b>47%</b>

Over the next five years, the 392 manufacturing companies surveyed indicated that they expect to add a total of 1,796 jobs (359 average openings annually) for the eight occupations studied. CNC Machinist/Operator is the occupation with the largest number of current jobs, as well as projected new jobs (1,878 total). Each of the occupations studied have positive growth projections over the next five years, with an average growth rate of 47%.

### Advanced Manufacturing Growth by Region



There is a large range of projected job openings by region, with Los Angeles County projected to experience the largest number of new jobs over the next five years (945). The Central Valley and Orange County have the highest percentages of projected growth rate, with employers expecting 62% and 61% growth, respectively.



## Student Tips

- The majority of employers surveyed required some college/trade school for six of the eight occupations: CAD/CAM Designers, CAD/CAM Programmers, CAD/CAM Engineering Technicians, CNC Programmers, CNC Engineering Technicians and Quality Control Inspectors/Supervisors.
- Los Angeles County employers reported a high level of difficulty finding qualified employees in all eight occupations.
- The most difficult “soft” skill to find for every occupation with the exception of CAD/CAM Engineering Technician was problem solving.
- Students may benefit from attending “soft” skill- focused workshops that address skills such as Microsoft Office, math, teamwork/collaboration, problem solving, oral communication and written communication.

Employers were asked to identify technical skill requirements for each occupation. Below are the top two “must have skills” and “preferred skills” employers are looking for when hiring for each of these occupations.

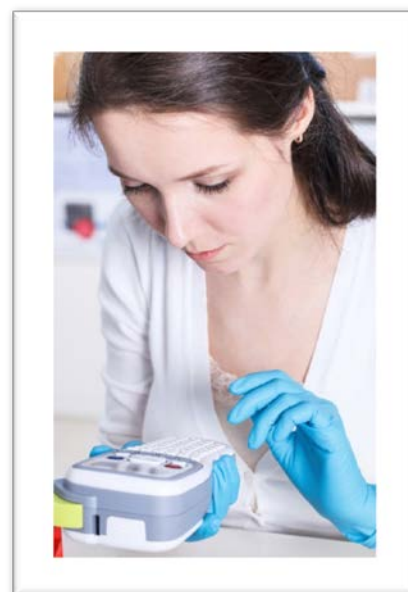
Occupation	Must Have Skills	Preferred Skills
CAD/CAM Designer	Reading blueprints CAD/CAM Systems knowledge	Experience with multi-axis machines Experience with MRP software
CAD/CAM Programmer	Reading blueprints CNC Programming	Experience with MRP Software Experience with ERP/SCN Systems
CAD/CAM Engineering Technician	CAD/CAM Systems knowledge Reading blueprints	Multi-axis programming 3-D modeling knowledge
CNC Machinist/Operator	Reading micrometers, calipers, and gauges Reading blueprints	Experience with multi-axis machines CNC Programming
CNC Programmer	Reading blueprints CNC Programming	MMP knowledge/experience Experience with multi-axis machines
CNC Engineering Technician	Reading micrometers, calipers, and gauges Reading blueprints	MMP knowledge/experience Experience with ERP/SCN systems
Quality Control Inspector	Reading micrometers, calipers and gauges Reading blueprints	Experience with ERP/SCN systems Experience with MRP software
Tool/Die Maker	Reading blueprints Reading micrometers, calipers, and gauges	CNC Machines knowledge CNC Machines (Sequencing)

## Existing Community College Programs

A review of education programs revealed 42 different manufacturing-related programs in Los Angeles County, Orange County and the Central Valley.

Advanced Manufacturing Programs			
Food Technology and Processing	Electromechanical Technology/Electromechanical Engineering Technology	Computer Technology/Computer Systems Technology	Industrial Electronics Technology/Technician
Wood Science and Wood Products/Pulp and Paper Technology	Instrumentation Technology/Technician	Computer Hardware/Technology/Technician	Industrial Mechanics and Maintenance Technology
Materials Engineering	Plastics and Polymer Engineering Technology/Technician	Drafting and Design Technology/Technician, General	Machine Tool Technology/Machinist
Mechanical Engineering	Manufacturing Engineering Technology/Technician	CAD/CADD Drafting and/or Design Technology/Technician	Machine Shop Technology/Assistant
Systems Engineering	Semiconductor Manufacturing Technology	Architectural Drafting and/or Architectural CAD/CADD	Sheet Metal Technology/Sheet working
Textile Sciences and Engineering	Industrial Production Technologies/Technicians/Other	Electrical/ Electronic Drafting and Electrical/Electronic CAD/CADD	Welding Technology/Welder
Industrial Engineering	Quality Control Technology/Technician	Mechanical Drafting and Mechanical Drafting CAD/CADD	Computer Numerically Controlled (CNC) Machinist Technology/CNC Machinist
Manufacturing Engineering	Aeronautical/Aerospace Engineering Technology/Technician	Engineering/Industrial Management	Furniture Design and Manufacturing
Electromechanical Engineering	Automotive Engineering Technology/Technician	Apparel and Textile Manufacturing	Logistics, Materials, and Supply Chain Management
Mechatronics, Robotics, and Automation Engineering	Mechanical Engineering/Mechanical Technology/Technician	Chemical Process Technology	Operations Management and Supervision
Electrical and Electronic Engineering Technology/Technician	Computer Engineering Technology/Technician		

To view our full study of advanced manufacturing, visit [www.coecc.net/mfg](http://www.coecc.net/mfg)



**EAST LOS ANGELES COLLEGE ENGINEERING AND  
TECHNOLOGIES DEPARTMENT ADVISORY  
COMMITTEE MEETING  
6/7/2017  
12:00 PM TO 2:00 PM**

**Attendance:**

**University / Industry Representatives Present**

1. Mr. Edward Alvarado, East Los Angeles College
2. Mr. John Alvo, Water Engineering & Technical Services LADWP
3. Mr. Mauricio Castillo, California State University, Los Angeles
4. Ms. Gora Datta, IEEE Region 6
5. Mr. Anthony Delgadillo, UPS
6. Mr. Ray Elledge, Verisurf Software Inc.
7. Mr. Kurtis Fukui, UPS
8. Mr. Humberto Gallegos, East Los Angeles College
9. Mr. David Goodreau, SMI/GWI/NTMA
10. Mr. Brian Hagerty, IEEE Region 6
11. Mr. Gerald K. Herder, California State Polytechnic University, Pomona
12. Everardo Hernandez, East Los Angeles College
13. Chris Herwerth, Glendale Community College
14. Mr. Paul Jones, Corporate & University Relations Group
15. Ms. Sandra Ibarra, East Los Angeles College
16. Mr. Stanley Jacobson, East Los Angeles College
17. Mr. Kamy Khashayar, East Los Angeles College
18. Mr. Tom Lazear, Archway System Inc.
19. Mr. Carlos Lopez, Bureau of Engineering Survey Division
20. Mr. Farid Mesghali, East Los Angeles College
21. Mr. Sami Nadjmetchi, VACCO Industries Multi-Fab Products
22. Mr. Harry Panjabi, Rama Enterprises
23. Mr. Rupa Purasinghe, California State University, Los Angeles
24. Ms. Gisele Ragusa, University of Southern California
25. Mr. Jose Ramirez, East Los Angeles College
26. Mr. Joe Rey, Klein Educational Systems
27. Mr. Bradley Roa, Paton Group
28. Mr. Juan Rodriguez, East Los Angeles College
29. MS. Neelam Rozario, Renesco Technical Training
30. Mr. James Sagil, California State University, Fullerton
31. Mr. Roberto Sedano, Water Engineering & Technical Services LADWP
32. Ms. Lynn Shaw, Doing What Matters, California Community Colleges
33. Mr. Brian Vazquez, East Los Angeles College
34. Mr. Eddie Villanueva, East Los Angeles College
35. Mr. Byron Vivar, UPS
36. Nancy Warter-Perez, California State University, Los Angeles
37. Ms. Michelle Yanez, San Gabriel Valley Economic Partnership
38. Mr. Josh Lazear, Archway System Inc.
39. Ms. Mareta Zúñiga, BuildLACCD Program
40. Mr. Eric Guevara, East Los Angeles College

41. Mr. Frank Montelongo, East Los Angeles College
42. Mr. Joshua Bonilla, East Los Angeles College
43. Ms. Maria Gonzalez, East Los Angeles College
44. Ms. Dana Page, East Los Angeles College
45. Mr. Victor Marquez, East Los Angeles College
46. Mr. Chokin Chin, East Los Angeles College
47. Ms. Ashley Orta, East Los Angeles College

48. Mr. Jorge Castillo, East Los Angeles College
49. Mr. James Arredondo, East Los Angeles College
50. Ms. Quennie Inga, East Los Angeles Collge
51. Mr. Antonio Ascencio, East Los Angeles College
52. Ms. Sandra Jaime, East Los Angeles College
53. Ms. Erika Ramirez, East Los Angeles College

**Meeting was called to order at 12:15 PM**

Welcome Speech from Faculty Department Chair/Professor Jose Ramirez.

- a) Welcome everyone to the East Los Angeles College Engineering & Technologies Advisory meeting 2017.

Introduction and review of 2016 Advisory Committee minutes

Call for corrections and noted

- a) No corrections were made.

Motion to approve meeting minutes from 2016 Advisory Committee

- a) First motion to approve the minutes Gisele Ragusa.
- b) Second motion to approve the minutes Tom Lazear.
- c) Motion Approved by consent

**Presentation on 2016-2017 Department Activities Summary**

CCCCO: Doing What Matters Grants

Proposition 39 Clean Energy Jobs Creation Workforce Grant: EET Skills Certificates

Proposition 39 Clean Energy Jobs Creation Workforce Grant: Advance Manufacturing Bootcamp

Lottery Grant & ELAC 100 Budget

Dual Enrollment: Associate Dean Dueñas

ELAC School of Continuing Education: AB104

California Work Opportunity and Responsibility to Kids (CalWORKs)

Perkins Grants

CTE Strong Workforce

Unmanned Aerial Vehicle (UAV) Training Project

Certificates, A.S. Degrees and Transfers



## Meeting Presentations

Presentation by Engineering Club members

- a) Ms. Dona Marie Page, President of Engineering Club, presents the mission and vision goal for engineering clubs, Engineering students, and future STEM students. Ms. Page speaks on the beneficiaries of Engineering club, Community Outreach Events, and Conferences meetings.
- b) Ms. Maria Gonzalez, elaborates on Women Engineers.

Presentation by General Engineering 212

- a) General Engineering class members presented their sterling engine FEVO.

Presentation by Dynamics class

- a. Dynamic students: Victor Marquez and Chokin Chin presentation on the five stages of energy transfer.

## Round Table discussions:

1. Mr. Ramirez provides explanations on the State programs: Engineering Degree and Certifications.
2. Mr. Khashayar discusses advance manufacturing program and the success of the engineering manufacturing Bootcamp which exposes students to general manufacturing. Student completion of the Bootcamp will receive certification of completion. It is suggested by Mr. Khashayar that manufacturing industry members hire entry level certified manufactures so that individuals go into industry with the will to work.
3. Dr. Gallegos elaborates on Geo-Spatial Engineering and Technologies
4. Mr. David Goodreau suggest that courses/skillsets acquired in class be fully grasp by the student who is applying technical applications. It is also suggested that skillsets aligned to what the engineer wants. In many cases a student might have the experience of computers, however, lacks the experience in software assistance.
5. Ms. Mareta Zúñiga speaks on internship components. It is essential that students introduce themselves to businesses. Ms. Zúñiga also suggests that schools couple internship with some funding or program that provides students with the opportunity to get their foot in the door, to acquire hands-on and work experience.
6. Mr. John Alvo implies that students have an in-depth understanding of the fundamentals, many students go into industry with the expectation of coming into the top; however, all that is require is the basics and the tests to get in the civil service world. It is perceive that graduate students coming from Universities cannot pass the civil service test because they lack the basic fundamentals. It is important that as educators, one prepares their student for tests.
7. Gisele Ragusa speak on volunteer work, she conveys that many students cannot afford to do volunteer work, many students do not qualify for financial support and have to work in order to buy school books and supplies. Ms. Gisele Ragusa suggest that there be a partnership paid internship with colleges and universities.
8. Mr. Kurtis Fukui speaks on job offers provided by UPS. UPS offers level entry positions that teaches candidates the skillsets and the culture of UPS. After 6 months candidates can promote to engineering.

9. Mr. Eric Guevara speaks on internship and announces that students are willing to accept pain or non-paid internships.
10. Rupa Purasinghe Speaks on paid internship.
11. Mr. Brian Hagerty recommends calling the CIS to CS transformation program CECS (Computer Engineering and Computer Science). CECS is more comprehensive than CS.
12. Mr. Ray Elledge, in regards to Quality control Tech and CNC Certification, implies that Quality Control Technician - QTC runs parallel to the CNC program. Mr. Ray Elledge, suggests that the two courses be ducktail or combine with other courses. Other campuses are duck tailing their MasterCAM Lab.
13. Mr. Bradley Roa suggest that classes be modify and integrate with CIS (Computer Intergrade Manufacturing).
14. Mr. Bradley Roa suggested that there be a website update which allows industry members to post internship/job openings for continuing and graduate students.
15. Mr. Brian Hagerty speaks on energy analyses for sustainability.

### **Motion to approved Department Request**

- a) First motion Kamy Khashayar
- b) Second motion Carlos Lopez
- c) Motion Approved

### **Department Request:**

#### **a. Electronics: IT Technician Pathway**

- I. Certificate of Achievement:
  - Computer Retail Sales and Support (Stage I)
  - Help Desk User Support (Stage II)
  - IT Technician (Stage III)
- II. Associates of Science Degree
  - IT Technician (Stage III)
- III. K5-108E Location for Netlab + Network Servers
- IV. CTE Strong Workforce Grant Proposal
- V. Potential merger of Computer Science discipline from Business Department with Engineering and Technologies Department
- VI. Engineering Instructor Tenure Track for Fall 2018
- VII. Engineering Laboratory Technician
  - Replacement of Electronics Department (Joe Kao)
- VIII. Accreditation Board for Engineering and Technology (ABET)
  - Engineering Technology Accreditation Commission
- IX. Unmanned Autonomous Systems (UAS)
  - Program and course development
  - New Top Code

**b. Guided Pathway Academy**

Courses:

- GE 101 Introduction to Science, Engineering and Technology (UC:CSU) 2 units
- MIT 220 Introduction to Robotics (CSU) 3 Units
- EET 123 Programming with Arduino (CSU) 2 Units
- EGD TEK 101 Engineering Graphics (UC:CSU) 3 Units
- EGD TEK 111 AutoCAD 2D (UC:CSU) 3 Units
- EGD TEK 121 SolidWorks 3D (CSU) 3 Units
- ES 100 Plane Surveying I: Boot Camp for High School Students 2 Units
- ES 101 Plane Surveying II: Boot Camp for High School Students 2 Units (Pending New Course)

**c. Engineering Technology Certificate and Degree programs**

- I. Advanced Manufacturing Engineering Technician
  - Computer Aided Manufacturing – CAM in CNC Programming and CNC Operation
- II. Mechanical Engineering Technician
  - Computer Aided Design – CAD with 3D printing and Laser Scanning
- III. Industrial Engineering Technician
  - Quality Control and Assurance – QA with Coordinate Measuring machine (CMM) and Laser Scanning.

**d. Software/Equipment/Facilities**

Bentley Suite, Suit, SolidWorks, CREO PTC, Mathworks, CAD Plotter,	
Cannon Copier, GIS, 3D Printers Maintenance	\$35K
IT Pathway: Stage I, II, and III	\$1200K
Advanced Manufacturing Equipment	\$600K
Reverse Engineering Arms	\$3K
Data Collectors for all Total Stations x7	\$25K
Reflector less Total Station x5	\$30K
GPS-RTK unit x2Each	\$80K
Tooling-U	\$10K
Accreditation Board for Engineering and Technology (ABET)	\$20K
Chairs for E7-101 and E7-302	\$10K
Engineering Computers: E7-101	\$130K
Unmanned Aerial Vehicles (UAS)	\$100K

**Meeting called to adjourn at 2:45 PM**