

Contributors:

Joseph Akpovi, Lead Logistics and Supply Chain Instructor

Jeff Beebe, Lead Auto Body Instructor/Curriculum Rep.

Pedro Mendez, Dean of PSTEWD

Modesto Junior College Logistics and Supply Chain Management Program

CTE NARRATIVE TEMPLATE for a (credit) A.S. Degree

SPO2: Program Award	A.S. Degree	Faculty Workload (1)	1.00
Program Title	Logistics & Supply Chain Management	New Faculty Positions	1
Program Goal	Career Technical Education	New Equipment	0
SP01: Pgm Top Code	0510.00	New/Remodeled Facilities	0
Required Certificate Unit Minimum	31	Library Acquisitions	0
Required Certificate Units Maximum	34	Program Review Date (2)	9/2018
Annual Completers	10	Gainful Employment	No
New Annual Labor Demand (CTE Only)	168	Apprenticeship	No
		Distance Education (3)	0%
		CTE Regional Consortium Approved	TBD
		District Governing Board Approved	TBD

(1) Faculty load based on number of sections to support program student thru put

(2) Review date within 2 years following the approval of program. CTE must be every two years.

(3) Percent of courses offered in hybrid or distance ed.

ITEM1: Program Goals and Objectives

The Modesto Junior College Logistics and Supply Chain Management A.S. Degree program is designed to prepare students for entry level jobs in warehouse operations, inventory control, distribution center operations, transportation operations, production operations, procurement, import/export, or customer service. Successful students will receive a vocational education that will give them the foundation for jobs such as warehouse clerk, distribution clerk, inventory clerk, shipping clerk, receiving clerk, purchasing clerk, production scheduler or customer representative.

ITEM 2: Catalog Description

The Logistics and Supply Chain Management A.S. Degree program offers students a comprehensive general logistics and supply chain foundation for entry level professional jobs in warehouse operations, distribution center operations, inventory control, transportation operations, purchasing, customer service or import/export operations. Students will have the option to earn an Associate degree or a Certificate of Achievement.

PROGRAM LEARNING OUTCOMES: Upon satisfactory completion of the program's required discipline courses, the student will be able to:

1. Describe key logistics and supply chain functions, processes and technologies.
2. Apply essential logistics and supply chain concepts.
3. Demonstrate knowledge and skills to work successfully in an entry level professional job in the logistics and supply chain industry.
4. Think critically across supply chain functional areas to solve operations problems.
5. Use key supply chain information systems and apply technology to analyze supply chain problems.
6. Apply effective team working skills.

GENERAL LEARNING OUTCOMES (AS DEGREE ONLY):

1. **NATURAL SCIENCE:** (1) Explaining how the scientific method is used to solve problems and (2) Describing how scientific discoveries and theories affect human activities.
2. **SOCIAL AND BEHAVIORAL SCIENCE:** (1) Describing the method of inquiry used by the social and behavioral sciences, (2) Describing how societies and social subgroups have operated in various times and cultures, and (3) Analyzing the ways that individuals act and have acted in response to their societies.
3. **HUMANITIES:** (1) Demonstrating awareness of the various ways that culture and ethnicity affect individual experience and society as a whole and (2) Demonstrating the ability to make well considered aesthetic judgments.
4. **LANGUAGE AND RATIONALITY:** (1) Demonstrating awareness of the interactive nature of communication involving effective listening, reading, writing, and speaking, (2) Demonstrating critical thinking in the analysis and production of communication, and (3) Demonstrating the ability to find, evaluate, and use information in a variety of formats.
5. **HEALTH EDUCATION:** (1) Describing the integration of the physiological and psychological human being, (2) Analyzing the development of self and making plans for lifelong learning, (3) Evaluating the impact of daily decisions on life and health.

ITEM 3: Program Requirements

A.S. Degree: Logistics and Supply Chain Management

To earn an A.S. degree in Logistics and Supply Chain Management, the student must complete the requirements detailed in the Career Technical Education Pathway or the University Preparation Pathway which include completion of all required courses and three of the elective courses below with a "C" or better.

Required Courses: Complete 22 units			Units
OFADM 256 ⁰	[1]	Introduction to Word Processing	1
OFADM 259	[1]	Introduction to Spreadsheet Software	1
OFADM 261	[1]	Introduction to Databases	1
OFADM 262	[1]	Introduction to Business Presentation Software	1
LOGST 201	[1]	Operations Management and Lean Principles	3
LOGST 202	[1]	Introduction to Supply Chain Management	3
LOGST 203	[1]	Introduction to Transportation Management	3
LOGST 205	[1]	Introduction to Warehouse Management	3
LOGST 206	[2]	Introduction to Purchasing and Contracting	3
LOGST 207	[2]	Introduction to Customer Service	3

Elective Courses: Complete three courses.			Units
BUSAD 201	[2]	Financial Accounting	4
BUSAD 202	[2]	Managerial Accounting	4
BUSAD 208	[2]	Introduction to International Business	3
BUSAD 209	[2]	Import/Export Fundamentals	3
BUSAD 210	[2]	Business Communication	3
BUSAD 218	[2]	Business Law	4
BUSAD 248	[2]	Introduction to Business	3
ECON 101	[2]	Principles of Macroeconomics	3
ECON 102	[2]	Principles of Microeconomics	3
LOGST 299BD	[2]	Logistics Internship	2 - 4
OFADM 313	[2]	Office Skills	3
SUPR 351	[2]	Elements of Supervision	3

Total Units **31 - 34**

ITEM 4: Master Planning

The MJC Logistics & Supply Chain Department currently consists of one full-time instructor and two part-time instructors. The program is located on the MJC West Campus and in Patterson at the Patterson USD Professional Development Center. The development of this program at the community college and secondary education level is made possible via a CCPT Grant for the Northern San Joaquin Valley region.

The MJC Logistics and Supply Chain Management program was initiated as part of the California Career Pathways Trust (CCPT) grant to address the needs for qualified Logistics workforce in the Central Valley. Logistics jobs are the fastest growing occupations (at an estimated 22% projected growth over 10 years) in this region which is home to an increasing number of distribution centers and plant warehouses operated by large companies such as ConAgra, E. & J. Gallo Winery, Foster Farms, Frito-Lay, Save Mart, Amazon, Costco, Grainger, CVS, Americold, G-3 Enterprises, Del Monte Foods Inc., and Sierra Pacific Warehouse Group. These employers need to fill many positions in Logistics, and one of their main challenges is the significant skills gaps of the local potential workforce. The MJC Logistics and Supply Chain program is designed to help address these needs by establishing a pipeline of skilled workers for the local logistics industry.

MJC Logistics-Supply Chain Faculty are actively involved in advisories meeting participation at the local, regional, state and national level with organizations inclusive of MHI, MSSC and APICs. In addition, MJC Logistics-Supply Chain Faculty are working with a regional network of community college, university and

high school educators and the local food manufacturing, distribution and warehouse industry. The department brings together local employers from local facilities with distribution, warehousing, cold storage, fulfillment center needs. At present, this advisory group has education representatives from Patterson High School, Merced County Office of Education, Stanislaus County Office of Education and Modesto Junior College. This group evaluates the responsiveness of secondary and postsecondary programs against the needs of the industry. The proposed **Logistics & Supply Chain Management Program** is a new stackable certificate and degree option available for students at MJC; and therefore, appropriate to the objectives and conditions of higher education and community college education in California pursuant to Title 5 sections 55130(b)(6) and 55130(b)(7).

To establish the Logistics and Supply Chain Management program, the following accommodations are required:

- 1 classroom with audio/video and network capabilities for at least 25 students.
- At least 5000 sq. ft of covered space with a 15' high ceiling, industrial electrical connections, and networking capabilities for forklift training
- 15 Handheld scanners
- Industry grade warehouse management system

The diagram below illustrates the MJC Logistics and Supply Chain Program proposed for approval for the 2016-17 academic year.

A.S. Degree Logistics & Supply Chain Management (31-34 units + General Education)
Certificate of Achievement: Logistics & Supply Chain Management (28-30 units)
Skills Recognition Award: Logistics & Supply Chain Management (15 units)
Skills Recognition Award: Logistics Associate - APICs GLA (9 units)

The proposed program will operate as an open enrollment program and be operated out of the MJC West Campus, the Tenaya Complex and at Patterson High School. Open enrollment will be adhered to through observance of traditional college wide registration and enrollment practice available to all student seeking enrollment into college classes at Modesto Junior College – classes and program information will be published in the catalog and semester schedules for students seeking studies in logistics, distribution and warehousing. No additional student selection criteria are in place; this certificate complies with California Code of Regulations, Title 5, sections 55201 and 58106.

CTE Logistics and Supply Chain Advisory Committee

Pedro Mendez	MJC Dean
Joseph Akpovi	MJC Logistics-Supply Chain Instructor
Jeff Rowe	Patterson USD CTE Director
James Toste, T Lomeli	Patterson HS Business Logistics Instructor
Cindy Young	Stanislaus County Office of Ed. [Supply Chain Technician Program]
Larry Garcia	MJC Lecturer/ MCOE Lift Truck Teacher
Mike Schneider	Grainger
Ken Hobbs, Y Samms, K Marcela	G3 Enterprise
Matt Haugrud	Pallet Recovery Service
Al Houtekamer, R Hoffman	CVS Caremark

Brian Palmer, J Bueno	Restoration Hardware Distribution
Daniel Fay	Amazon
Dave White	Stanislaus Alliance
Enriquez Rodriguez	Sierra Pacific Warehouse & Distribution
Fred Baker	Seneca Foods – Warehouse/Distribution
Joe Melcher	COSTCO Distribution
Saul Morales	Sysco
Mary Ann Henriques	Diamond Foods + MJC Safety Instructor

*** Please note program has also been reviewed by the Manufacturing Advisory Board. Further a High Ed. Supply Chain Management Advisory Committee is being formed by the Modesto Junior College to more specifically input and support the focus need of Supply Chain Management Professionals. www.mjc.edu/teched*

ITEM 5: Enrollment and Completer Projections

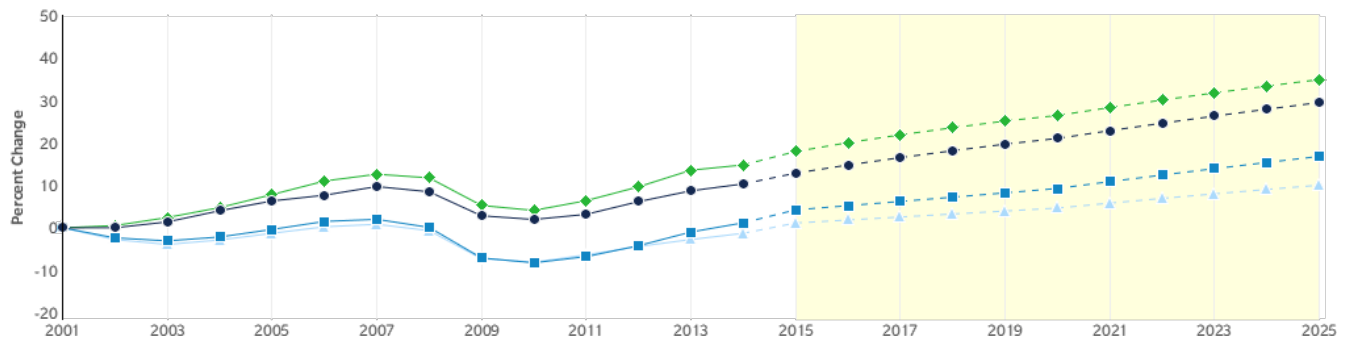
The MJC Logistics and Supply Chain Management Program presently projects 350 enrollees in its first programs year. Students enter the program to pursue various goals including skill enhancement, certificates and degrees. We anticipate the current program will achieve 15-25 completers range per year by its 2nd year and maintain this completion range rate through its fifth year of operation.

		YEAR 1		YEAR 2	
CBO1: Course	CBO2: Course Title	Annual Sections	Annual Enrollment	Annual Sections	Annual Enrollment
LOGST 201	Operations Management and Lean Principles	2	50	3	120
LOGST 202	Introduction to Supply Chain Management	2	50	3	120
LOGST 203	Introduction to Transportation Management	1	30	1	30
OFADM 261	Introduction to Databases	1	30	1	30
LOGST 205	Introduction to Warehouse Management	1	30	1	30
LOGST 206	Introduction to Purchasing and Contracting	1	30	1	30
OFADM 256	Introduction to Word Processing	1	30	1	30
OFADM 259	Introduction to Spreadsheet Software	1	30	1	30
OFADM 262	Introduction to Business Presentation Software	1	30	1	30
LOGST 207	Introduction to Customer Service	1	30	1	30
OFADM 313	Workplace Skills and Career Planning	1	30	2	45
BUSAD 209	Import/Export Fundamentals	1	30	2	45
LOGST 299BD	Logistics Internship	1	30	2	45

Career Technical Education – Labor Review:

Labor Market Information has been evaluated. This analysis of data includes local, sub-region, central region and state level data. In all sets of data, trends have indicated a significant need local Logistics and Supply Chain professionals, in the Northern San Joaquin Valley Region. Specifically, the data illustrated below the region selected projects an average of 646 jobs across multiple related industries and various occupations, each year between 2015 and 2025.

Regional Trends

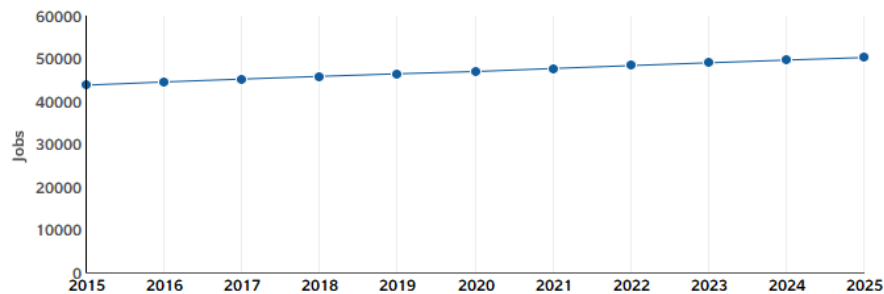


	Region	2015 Jobs	2025 Jobs	Change	% Change
●	Region	43,892	50,356	6,464	14.7%
●	State	1,359,915	1,524,174	164,259	12.1%
●	Nation	10,945,699	11,909,577	963,878	8.8%
●	San Joaquin Valley	111,711	127,748	16,037	14.4%

** EMSI. Report produced by P. Mendez (MJC): Logistics Summary Report FA2015

Growth

43,892	50,356	6,463	14.7%
2015 Jobs	2025 Jobs	Change (2015-2025)	% Change (2015-2025)

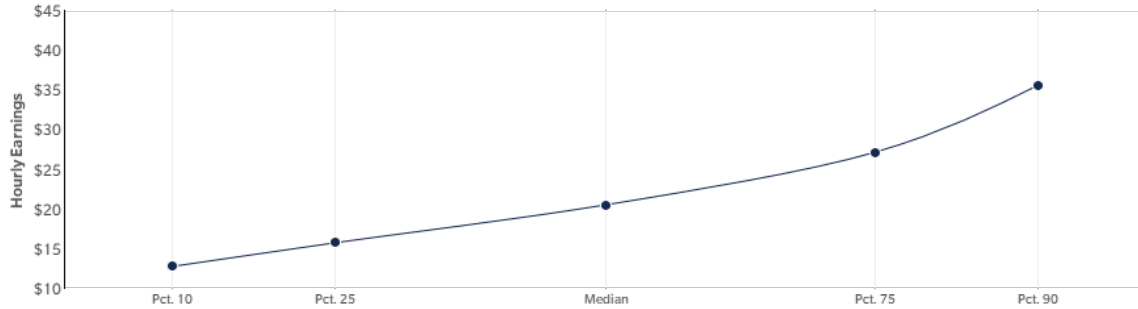


Occupation	2015 Jobs	2025 Jobs	Change	% Change
General and Operations Managers (11-1021)	6,799	7,729	930	14%
Industrial Production Managers (11-3051)	760	801	41	5%

Occupation	2015 Jobs	2025 Jobs	Change	% Change
Transportation, Storage, and Distribution Managers (11-3071)	633	781	148	23%
Wholesale and Retail Buyers, Except Farm Products (13-1022)	538	622	84	16%
Logisticians (13-1081)	218	288	70	32%
Operations Research Analysts (15-2031)	137	170	33	24%
Bill and Account Collectors (43-3011)	1,203	1,321	118	10%
Procurement Clerks (43-3061)	208	229	21	10%
Order Clerks (43-4151)	537	594	57	11%
Cargo and Freight Agents (43-5011)	84	134	50	60%
Production, Planning, and Expediting Clerks (43-5061)	744	851	107	14%
Shipping, Receiving, and Traffic Clerks (43-5071)	3,268	3,639	371	11%
Stock Clerks and Order Fillers (43-5081)	7,832	8,859	1,027	13%
First-Line Supervisors of Production and Operating Workers (51-1011)	2,467	2,568	101	4%
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand (53-1021)	984	1,194	210	21%
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators (53-1031)	936	1,143	207	22%
Industrial Truck and Tractor Operators (53-7051)	4,583	4,884	301	7%
Laborers and Freight, Stock, and Material Movers, Hand (53-7062)	11,963	14,548	2,585	22%

Percentile Earnings

\$15.73/hr 25th Percentile Earnings	\$20.50/hr Median Earnings	\$27.16/hr 75th Percentile Earnings
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
General and Operations Managers (11-1021)	\$28.72	\$40.64	\$58.38
Industrial Production Managers (11-3051)	\$31.85	\$39.77	\$49.20
Transportation, Storage, and Distribution Managers (11-3071)	\$29.87	\$36.40	\$45.07
Wholesale and Retail Buyers, Except Farm Products (13-1022)	\$19.56	\$23.70	\$30.56
Logisticians (13-1081)	\$27.46	\$37.18	\$45.28
Operations Research Analysts (15-2031)	\$26.56	\$35.40	\$48.65
Bill and Account Collectors (43-3011)	\$11.53	\$14.24	\$17.67
Procurement Clerks (43-3061)	\$16.81	\$20.63	\$24.43
Order Clerks (43-4151)	\$13.56	\$16.11	\$18.53
Cargo and Freight Agents (43-5011)	\$19.17	\$24.18	\$36.01
Production, Planning, and Expediting Clerks (43-5061)	\$17.80	\$21.71	\$26.84
Shipping, Receiving, and Traffic Clerks (43-5071)	\$12.16	\$15.64	\$19.33
Stock Clerks and Order Fillers (43-5081)	\$9.80	\$12.19	\$16.43

Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
First-Line Supervisors of Production and Operating Workers (51-1011)	\$20.20	\$25.70	\$31.66
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand (53-1021)	\$19.28	\$23.54	\$29.07
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators (53-1031)	\$19.23	\$26.15	\$33.28
Industrial Truck and Tractor Operators (53-7051)	\$14.08	\$17.77	\$21.21
Laborers and Freight, Stock, and Material Movers, Hand (53-7062)	\$10.44	\$13.21	\$17.68

*** EMSI. Report produced by P. Mendez (MJC): Logistics Summary Report FA2015*

ITEM 6: Place of Program in Curriculum/Similar Programs

The program provides an opportunity to offer new curriculum targeting Supply Chain Management professions. There are a total of nine new courses that have been developed. Seven of these courses are being used in the certificate and A. S. degree programs and three courses are being used in the lift truck training and APICS Global Logistics Associate Industry Certification. MSSC: Certified Logistics Curriculum and Certification will also continue as a non-for-credit program providing continue options to fulfillment centers that use this third party certification. Because APICS' body of knowledge is the standard for the industry, alignment with APICS certifications provides the best strategic options for a comprehensive program as intended in the California Career Pathway Trust Grant. There is no targeted program at Modesto Junior College that effectively focuses on the needs of Supply Chain professions for our local industries in agriculture, food manufacturing, warehouses, distribution centers and transport operations.

ITEM 7: Similar Programs at Other Colleges in Service Area

In the immediate region, San Joaquin Delta College is the only other community college with a Logistics program, but their program is particularly focused on transportation and international logistics. Fresno City College has some isolated logistics courses, but not a structured program. In Northern California, Skyline College and College of Alameda also have a logistics program.

ITEM 8: Additional ITEMS identified by the Central Region Review:

Display of Proposed Sequence (generally by semester)

Semester sequence is denoted by [1], [2], [3] and [4] on Course Program Layout in Section 3.

Explanation of Employer Relationship (if applicable)

Industry employers actively participate in affirming scheduling and curriculum direction, supporting outreach efforts, donations, internship and job placement.

Financial Support Plan

College has hired a tenured track faculty member in support of Logistics and Supply Chain Program. In addition, CCCPT Grant resources for is helping seed the first 3 years of development (i.e. curriculum development, outreach, supplies, technology and equipment). General operation funding for supplies, professional development, and adjunct instructions will be supported.

Business Logistics Advisory Council
Meeting Notes
Tuesday, November 3, 2015

1. Welcome and Introduction of Members and Guests

Attendees: Phil Alfano (PJUSD), Jeff Rowe (PJUSD), Tony Lomeli (Patterson High), James Toste (Patterson High), Cindy Young (SCOE), Elizabeth Fancanha (Brandman University), Richard Carnes (Brandon University), Dave Dein (Faith Logistics), Tim Wood (Grainger), Pat Dodd (Gallo Winery), Joseph Akpovi (MJC), Daniel Fay (Amazon)

2. Naming of the New Training Facility at PHS

Phil Alfano noted that the new training facility at Patterson High School has yet to be named and requested input from the council. The council suggested that Distribution, Robotics, Logistics, Career, Training Center, and Academy be incorporated into the new facility name. No name was selected. Jeff Rowe will be sending a survey to the committee with name options in the following week.

3. Appointment of a Committee Chair from Industry

The committee suggested that Scott Pathe from CVS be contacted about the position. Tim Wood volunteered from Grainger if Scott is not available.

4. MHI Summit Report

Phil attended the Material Handlers Institute executive summit in Florida earlier this month. He provided updates on the latest developments in the industry, including the nation-wide problem of labor shortage. The Patterson High program was mentioned as a model. He also reported that many businesses are struggling to hire enough truck drivers. He heard about many new innovations in the industry that we may be seeing soon.

5. Equipment Purchases and Donations

The CISS Inventory Control system has been purchased. It is very similar to what Amazon and Grainger use. Students will be able to log in, scan inventory in and out, take orders, and issue reports. Several other items have been ordered such as hand held scanners, packing stations and pick carts. Grainger has donated a rolling conveyor line and racks. Currently working on a potential safety issue with the rack footings. First Book is delivering 5 to 10 pallets of Random and Disney books to be distributed by the PHS students before Christmas. The students are currently processing supply orders for teachers and providing them with reports out of the inventory control system.

6. Brandman University Scholarship Opportunities

Elizabeth Fancanha and Richard Carnes from Brandman spoke about the University's educational programs, including a Business degree with a focus on Logistics. They are currently offering a 10% tuition discount to a Patterson cohort of students. The classes can be offered online or in person locally if a large enough class enrolls. Brandon University is an accredited university offering accelerated programs. Scholarship and Financial aid opportunities are available.

7. MJC Spring 2016 LOST 200 Course Offering

Joseph from Modesto Junior college announced that MJC will now be offering an introduction to logistics class. One class will be offered in the evenings in Patterson and one in Modesto.

8. Spring Manufacturing Academy

Pedro Mendez was not present to discuss this item. This item will be addressed in the next meeting.

9. Discussion: Truck Driver Shortage

Phil presented on the issue of truck driver shortages across the country and the resulting high wages being paid to drivers. Dave Dein from Faith Logistics presented on his non-profit truck driver training program currently being offered to ex-offenders. Patterson Unified is looking into the possibility of offering a Truck Driving program. The committee was very supportive of the idea and suggested that Trucking companies might be willing to donate to the effort. The District will continue to pursue the idea.

Action Items:

1. Approval for Modesto Junior College to Offer the Skills Recognition Award for Global Logistics Associates

The Business Logistics Advisory Council has approved and supports Modesto Junior College in offering the Skills Recognition Certificate Program for Global Logistics as presented by Joseph Akpovi.

2. Approval for Modesto Junior College to offer Certificate and Degree programs in Logistics and Supply Chain Management.

The Business Logistics Advisory Council has approved and supports Modesto Junior College in offering Certificate and Degree programs in Logistics and Supply Chain Management as presented to by Joseph Akpovi.

Next Meeting:

Tuesday, December 1, 2015

Professional Development Center, 510 Keystone Blvd, Patterson, Ca 95363

Occupation Overview

EMSI Q2 2015 Data Set

October 2015

Modesto Junior College



435 College Avenue
Modesto, California 95350
209.575.6550

Parameters

Occupations

18 items selected. See Appendix A for details.

Regions

Code	Description
6047	Merced County, CA
6077	San Joaquin County, CA
6099	Stanislaus County, CA

Timeframe

2015 - 2025

Datarun

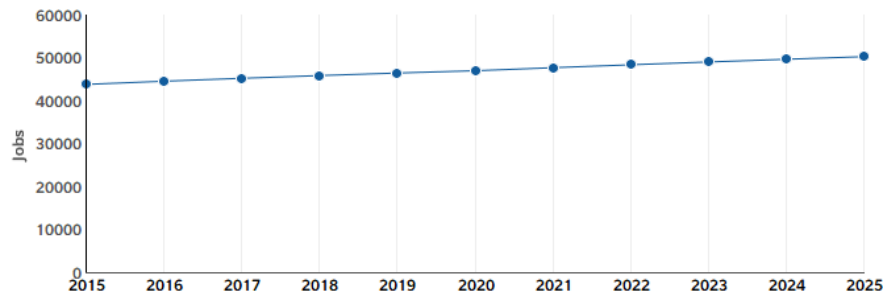
2015.2 – QCEW Employees, Non-QCEW Employees, Self-Employed, and Extended Proprietors

Occupation Summary for MJC_ Logistics & Supply Chain

43,892 Jobs (2015) 20% above National average	14.7% % Change (2015-2025) Nation: 8.8%	\$20.50/hr Median Hourly Earnings Nation: \$22.38/hr
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Growth

43,892 2015 Jobs	50,356 2025 Jobs	6,463 Change (2015-2025)	14.7% % Change (2015-2025)
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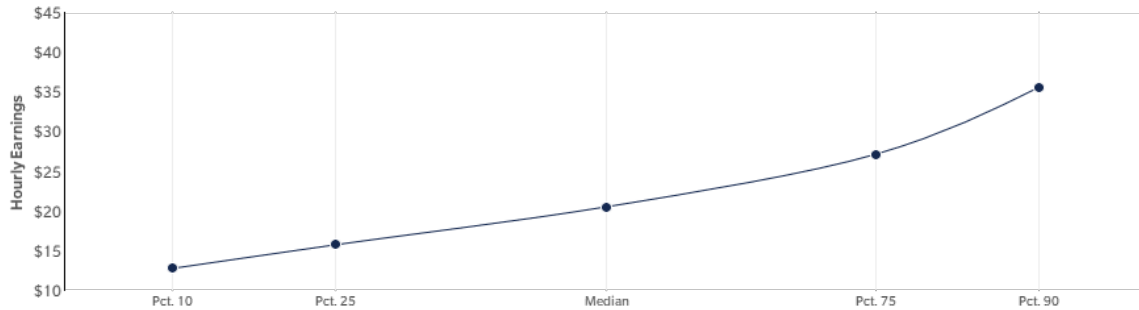


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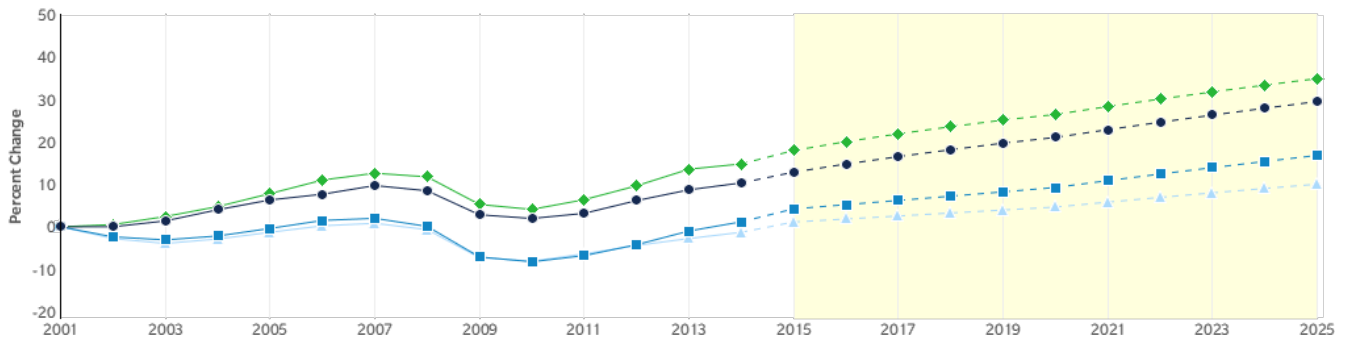
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Regional Trends




	Region	2015 Jobs	2025 Jobs	Change	% Change
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▲	Nation	10,945,699	11,909,577	963,878	8.8%
◆	San Joaquin Valley	111,711	127,748	16,037	14.4%

Regional Breakdown

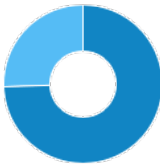


County	2025 Jobs
San Joaquin County, CA	27,877
Stanislaus County, CA	16,038
Merced County, CA	6,441

Job Postings Summary

<p>1,795 Unique Postings (Aug 2015)</p> <p>6,215 Total Postings</p>	<p>3 : 1 Posting Intensity (Aug 2015)</p> <p>Regional Average: 5 : 1</p> 
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Occupation Gender Breakdown



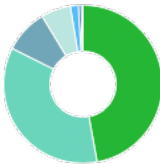
	Gender	2015 Jobs	2015 Percent
•	Males	32,683	74.5% 
•	Females	11,209	25.5% 

Occupation Age Breakdown



	Age	2015 Jobs	2015 Percent
●	14-18	363	0.8%
●	19-24	4,783	10.9% █
●	25-34	10,147	23.1% █
●	35-44	9,817	22.4% █
●	45-54	10,635	24.2% █
●	55-64	6,475	14.8% █
●	65+	1,672	3.8% █

Occupation Race/Ethnicity Breakdown



	Race/Ethnicity	2015 Jobs	2015 Percent
●	White	20,699	47.2%
●	Hispanic or Latino	15,481	35.3%
●	Asian	3,923	8.9%
●	Black or African American	2,656	6.1%
●	Two or More Races	709	1.6%
●	Native Hawaiian or Other Pacific Islander	245	0.6%
●	American Indian or Alaska Native	179	0.4%

Occupational Programs

14 Programs (2014)		1,278 Completions (2014)	2,367 Openings (2014)
CIP Code	Program	Completions (2014)	
52.0201	Business Administration and Management, General	956	
52.0101	Business/Commerce, General	181	
52.0408	General Office Occupations and Clerical Services	56	
44.0401	Public Administration	28	
52.0212	Retail Management	15	

Industries Employing MJC_ Logistics & Supply Chain

Industry	Occupation Group Jobs in Industry (2015)	% of Occupation Group in Industry (2015)	% of Total Jobs in Industry (2015)
General Warehousing and Storage	4,162	9.5%	61.6%
Temporary Help Services	1,909	4.3%	23.3%
Supermarkets and Other Grocery (except Convenience) Stores	1,845	4.2%	20.5%
Discount Department Stores	1,669	3.8%	24.6%
Wineries	981	2.2%	17.7%

Appendix A - Occupations

Code	Description
11-1021	General and Operations Managers
11-3051	Industrial Production Managers
11-3071	Transportation, Storage, and Distribution Managers
13-1022	Wholesale and Retail Buyers, Except Farm Products
13-1081	Logisticians
15-2031	Operations Research Analysts
43-3011	Bill and Account Collectors
43-3061	Procurement Clerks
43-4151	Order Clerks
43-5011	Cargo and Freight Agents
43-5061	Production, Planning, and Expediting Clerks
43-5071	Shipping, Receiving, and Traffic Clerks
43-5081	Stock Clerks and Order Fillers
51-1011	First-Line Supervisors of Production and Operating Workers
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators
53-7051	Industrial Truck and Tractor Operators
53-7062	Laborers and Freight, Stock, and Material Movers, Hand

Appendix B - Data Sources and Calculations

Occupation Data

EMSI occupation employment data are based on final EMSI industry data and final EMSI staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level EMSI earnings by industry.

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Job Postings Data

In partnership with EMSI's parent company CareerBuilder and other third party aggregators, EMSI collects its job postings data by scraping approximately 30,000 websites. EMSI then cleans the data and applies a two-step deduplication process to present an estimate of total unique postings. Normalization of data fields is performed using machine-learning technologies, which leverage not just job postings data but also CareerBuilder's extensive database of résumés and profiles.

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Staffing Patterns Data

The staffing pattern data in this report are compiled from several sources using a specialized process. For QCEW and Non-QCEW Employees classes of worker, sources include Occupational Employment Statistics, the National Industry-Occupation Employment Matrix, and the American Community Survey. For the Self-Employed and Extended Proprietors classes of worker, the primary source is the American Community Survey, with a small amount of information from Occupational Employment Statistics.

Industry Data

EMSI industry data have various sources depending on the class of worker. (1) For QCEW Employees, EMSI primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from

County Business Patterns and Current Employment Statistics. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

State Data Sources

This report uses state data from the following agencies: California Labor Market Information Department