ADVANCED MANUFACTURING AND LOGISTICS PATHWAY

What are Career Pathways?

Career Pathways are a sequence of training and education programs designed to develop a person’s academic and technical skills. By obtaining stackable credentials and developing new skills a worker can advance over time to successively higher levels of education and employment in a given industry or occupational sector.

Understanding the Basics

Soft skills, such as interpersonal skills, professionalism, and dependability, are important in all industries and occupations. These jobs can revolve around shifts or critical driving times so dependability, along with being flexible when the situation demands, is a valued characteristic. Manufacturing and logistics careers often involve interactions with customers so being able to talk about benefits of a product or service, or accept criticism as a professional company representative is important. Safety issues are also a critical part of these industries so attention to details and continuous learning are necessary.

In addition, Advanced Manufacturing, Transportation and Logistics have a set of industry-wide technical competencies that represent the knowledge and skills needed to be successful in these industries. Manufacturing Process Design and Development, Supply Chain Logistics, Maintenance and Repair, Knowledge and Compliance of Government Regulations, and the ability to adapt and consider new ways of doing things are some of the skills needed for success.

STEM Career Pathways

Science, Technology, Engineering and Mathematics (STEM) pathways are usually technical in nature, and play a key role in developing new products and technological breakthroughs. STEM occupations are some of the most in-demand and highest paying jobs in Missouri.

Science: Diverse occupations in Physical, Life and Natural Sciences. Science workers can be involved in research, development, and design; as well as outdoor field work.

Technology: Jobs connect people and businesses on a global scale, and an unprecedented number of firms need information technology employees.

Engineering: Occupations, including drafters, technicians, and engineers, develop and test new products we use every day.

Mathematics: Is as part of many occupations and can be used to analyze data and help solve real-world problems in engineering, sciences, or other fields.

WHO’S HIRING?

ADVANCED MANUFACTURING

Prof., Scientific, & Technical Services
Transportation Equipment Mfg.
Chemical Manufacturing

Honeywell
PepsiCo Inc.
Burns & McDonnell

TRANSPORTATION & LOGISTICS

Truck Transportation
Building Material/Garden Equipment & Supplies Dealers
Couriers and Messengers

Hogan Transportation
United Parcel Service Inc.
Lowe’s Companies, Inc.
## ADVANCED MANUFACTURING PATHWAYS

<table>
<thead>
<tr>
<th>NOW OCCUPATIONS</th>
<th>NEXT OCCUPATIONS</th>
<th>LATER OCCUPATIONS</th>
</tr>
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<tbody>
<tr>
<td><strong>One-Twelve months of On-The-Job training</strong></td>
<td><strong>Long-term OJT, Certificate, Assoc. Degree</strong></td>
<td><strong>Bachelor’s degree or Adv. Degree</strong></td>
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<tr>
<td>Production Operators</td>
<td>First-Line Product. Supervisors</td>
<td>Indust. Production Managers</td>
</tr>
<tr>
<td>CNC Operator</td>
<td>Electrical Engineering Technician</td>
<td>Electrical Engineers</td>
</tr>
<tr>
<td>General Maint. and Repair Workers</td>
<td>Mech. Engineering Technician</td>
<td>Mechanical Engineers</td>
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<tr>
<td></td>
<td>Indust. Machinery Mechanic</td>
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<td></td>
<td>Welders</td>
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<tr>
<td></td>
<td>Manufacturing Production Tech.</td>
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<tr>
<td></td>
<td>Mechanical Drafters</td>
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**Specialized Skills**

Entry-level specialized skills include the general operation of production equipment, inspection of parts, basic repairs, understanding manufacturing processes such as lean manufacturing and continuous improvement, and forklift operation. More advanced skills such as welding, CNC programming, and technical work to include testing, calibration, quality control, scheduling, and documentation require specialized training or on-the-job experience. Later occupations generally require a bachelor degree for engineering but production management can be obtained through extensive experience.

**Certifications and Software**

- American Board For Engineering And Technology (ABET) Accredited
- Professional Engineer Certification
- Six Sigma Certification
- AutoCAD or CAM Software

## TRANSPORTATION AND LOGISTICS PATHWAYS

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<td>Laborers and Material Movers</td>
<td>First-Line Transp. Supervisors</td>
<td>Transportation, Storage, and Distribution Managers</td>
</tr>
<tr>
<td>Industrial Truck and Tractor Operators</td>
<td>First-Line Supervisors of Office and Admin. Support Workers</td>
<td>Logisticians</td>
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<tr>
<td>Shipping and Receiving Clerks</td>
<td>Heavy and Tractor-Trailer Truck Drivers</td>
<td>Airline Pilots</td>
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<tr>
<td>Cargo and Freight Agents</td>
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<tr>
<td>Planning and Expediting Clerks</td>
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<td>Bus Drivers</td>
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**Specialized Skills**

Entry-level specialized skills include the general operation of material moving equipment, such as forklifts, dollies, and hand trucks, as well as knowledge of basic repairs, inspection, and packaging. More advanced skills such as office management, scheduling, and planning require specialized training or on-the-job experience. Later occupations generally require a bachelor degree for Logisticians and Airline Pilots but Transportation Management can often be obtained through extensive on-the-job experience.

**Certifications and Software**

- Commercial Driver’s License
- Enterprise Resource Planning (ERP) Software
- Forklift Operator Certification
- APICS (American Production and Inventory Control)
MANUFACTURING OCCUPATION PROFILE

Mechanical Drafters

Mechanical Drafters prepare detailed working diagrams of machinery and mechanical devices. They develop detailed design drawings and specifications for mechanical equipment, check dimensions of materials to be used, and review and analyze specifications, sketches, drawings, ideas, and related data to assess procedures and instructions affecting component designs.

Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) software is frequently used by employees in this occupation. Mechanical Drafters must have a good understanding of design techniques, mathematics, and a practical application of engineering science and technology. Problem solving and critical thinking skills are important to identify problems and evaluate strengths and weaknesses of alternative solutions.

The Computer Aided Drafting (CAD) certificate program enables students to secure work-ready skills that allow them to move into industry prepared to meet basic through advanced challenges; including knowledge of Additive Manufacturing and Parametric CAD.

*Fran Bartholet, Instructor, Crowder College*

**Entry Wage:** $33,290 | **Average Wage:** $49,090 | ** Experienced Wage:** $56,990

**Who’s Hiring?**

Mechanical Drafter job ads peaked in the 4th quarter of 2011. Over the last year they have been averaging 80 job ads per quarter. Some of the top job posting companies include:

- **Johnson Controls Inc.**
  *Statewide*

- **Parsons Brinckerhoff**
  *St. Louis*

- **Power Engineers Inc.**
  *St. Louis*
TRANSPORTATION AND LOGISTICS OCCUPATION PROFILE

Industrial Truck and Tractor Operators

Industrial Truck and Tractor Operators operate industrial trucks or tractors equipped to move materials around a warehouse, storage yard, factory, construction site, or similar location. They manually or mechanically load or unload materials and may inspect product load for accuracy or weigh materials or products. Industrial Truck and Tractor Operators must have good operation, control, and monitoring skills to safely and accurately move products. Good time management skills are also important in this occupation. Industrial Truck and Tractor Operators may sometimes use logistics software such as Enterprise Resource Planning (ERP) or inventory management software.

Entry Wage: $22,510 | Average Wage: $33,580 | Experienced Wage: $39,110

Who’s Hiring?

Jobs ads for Industrial Truck and Tractor Operators have been increasing over the past year. Some of the top job posting companies include:

- XPO Logistics
  Kansas City
- Nestle USA Inc.
  St. Louis
- Blount International
  Kansas City

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Sources:

Data for this analysis has been extracted using Burning Glass Technologies Labor/Insight™ tool which collects information from over 35,000 web sources, including job boards, newspapers, and employer websites. While this analysis presents a broad picture of hiring activity and serves as a measure of labor demand, it does not capture openings that are filled through other networks. Other sources include the Employment and Training Administration, Competency Model Clearinghouse for information available on selected industries in this report. Wage data is 2015 Occupational Employment Survey, Bureau of Labor Statistics.