### Manufacturing: Logistics and Inventory Control

**Career Pathway Plan of Study for Learners, Parents, Counselors, Teachers/Faculty**

This Career Pathway Plan of Study (based on the Logistics and Inventory Control Pathway of the Manufacturing Career Cluster) can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner’s educational and career goals. *This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.*

<table>
<thead>
<tr>
<th>EDUCATION LEVEL</th>
<th>GRADE</th>
<th>English/Language Arts</th>
<th>Math</th>
<th>Science</th>
<th>Social Studies/Sciences</th>
<th>Other Required Courses</th>
<th>*Career and Technical Courses and/or Degree Major Courses for Logistics and Inventory Control Pathway</th>
<th>SAMPLE Occupations Relating to This Pathway</th>
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<tr>
<td><strong>SECONDARY</strong></td>
<td>9</td>
<td>English/Language Arts I</td>
<td>Algebra I</td>
<td>Earth or Life or Physical Science</td>
<td>State History Civics</td>
<td>All plans of study should meet local and state high school graduation requirements and college entrance requirements. Certain local student organization activities are also important including public speaking, record keeping and work-based experiences.</td>
<td>• Introduction to Manufacturing Occupations</td>
<td>• Communications, Transportation and Utilities Manager</td>
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<td>10</td>
<td>English/Language Arts II</td>
<td>Geometry</td>
<td>Biology</td>
<td>U.S. History</td>
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<td>• Information Technology Applications</td>
<td>• Dispatcher</td>
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<td>11</td>
<td>English/Language Arts III</td>
<td>Algebra II</td>
<td>Chemistry</td>
<td>World History Economics</td>
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<td>• Employment in Manufacturing Occupations</td>
<td>• Freight, Stock, and Material Mover</td>
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<td>12</td>
<td>English/Language Arts IV</td>
<td>Trigonometry or Statistics or other math course</td>
<td>Physics</td>
<td>Psychology</td>
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<td>• Applications in Manufacturing Technology</td>
<td>• Industrial Truck and Tractor Operator</td>
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<td>• Logistical Engineer</td>
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<td>• Logistician</td>
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<td>• Materials Associate</td>
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<td>• Materials Handler</td>
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<td>• Materials Mover</td>
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<td>• Process Improvement Technician</td>
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<td>• Quality Control Technician</td>
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<td>• Traffic Manager</td>
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<td>• Traffic, Shipping, and Receiving Clerk</td>
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</tbody>
</table>

**Articulation/Dual Credit Transcribed-Postsecondary courses may be taken/moved to the secondary level for articulation/dual credit purposes.**

- **Year 13**
  - English Composition
  - Algebra
  - American Government Psychology
  - Safety in the Workplace
  - Continue Courses in the Area of Specialization

- **Year 14**
  - Speech/Oral Communication
  - Computer Applications
  - Biological Science
  - American History Geography
  - Logistics
  - Complete Manufacturing Major (4-Year Degree Program)

- **Year 15**
  - Continue courses in the area of specialization.

- **Year 16**
  - Complete Manufacturing Major (4-Year Degree Program)
Creating Your Institution’s Own Instructional Plan of Study

With a team of partners (secondary/postsecondary teachers and faculty, counselors, business/industry representatives, instructional leaders, and administrators), use the following steps to develop your own scope and sequence of career and technical courses as well as degree major courses for your institution’s plan of study.

1. Crosswalk the Cluster Foundation Knowledge and Skills (available at http://www.careerclusters.org/goto.cfm?id=94) to the content of your existing secondary and postsecondary programs/courses.

2. Crosswalk the Pathway Knowledge and Skills (available at http://www.careerclusters.org/goto.cfm?id=64) to the content of your existing secondary/postsecondary programs and courses.

3. Based on the crosswalks in steps 1 and 2, determine which existing programs/courses would adequately align to (cover) the knowledge and skills. These programs/courses would be revised to tighten up any alignment weaknesses and would become a part of a sequence of courses to address this pathway.

4. Based on the crosswalks in steps 1 and 2, determine what new courses need to be added to address any alignment weaknesses.

5. Sequence the content and learner outcomes of the existing programs/courses identified in step 3 and new courses identified in step 4 into a course sequence leading to preparation for all occupations within this pathway. (See list of occupations on page 1 of this document.)

6. The goal of this process would be a series of courses and their descriptions. The names of these courses would be inserted into the Career and Technical Courses column on the Plan of Study on page 1 of this document.

7. Below is a sample result of steps 1-6, and these course titles are inserted into the Plan of Study on page 1 of this document.

8. Crosswalk your state academic standards and applicable national standards (e.g., for mathematics, science, history, language arts, etc.) to the sequence of courses formulated in step 6.
Below are suggested courses that could result from steps 1-6 above. However, as an educational institution, course titles, descriptions and the sequence will be your own. This is a good model of courses for you to use as an example and to help you jump-start your process. Course content may be taught as concepts within other courses, or as modules or units of instruction.

The following course is based on the Cluster Foundation Knowledge and Skills found at http://www.careerclusters.org/goto.cfm?id=94. These skills are reinforced through participation in student organization activities.

#1
Introduction to Manufacturing Occupations: This course provides students an opportunity to experience various professional organized skill areas. These experiences are designed to be similar to occupations actually existing in the commercial/industrial workplace. This may be taught as a career exploration course in conjunction with other foundation Career Cluster courses.

The following course is based on the Cluster Foundation Knowledge and Skills as well as the Pathway Knowledge and Skills found at http://www.careerclusters.org/goto.cfm?id=64. These skills are reinforced through participation in student organization activities.

#2
Information Technology Applications: Students will use technology tools to manage personal schedules and contact information, create memos and notes, prepare simple reports and other business communications, manage computer operations and file storage, and use electronic mail and Internet applications to communicate, search for and access information.

The following courses expose students to Pathway Knowledge and Skills found at http://www.careerclusters.org/goto.cfm?id=64 and should include appropriate student activities.

#3
Employment in Manufacturing Occupations: Students will study the roles and responsibilities of various occupations related to manufacturing. Students will research available sources to acquire knowledge of how to maintain a safe and productive workplace including following local, federal and company regulations to perform environmental and safety inspections. Students will develop strategies for communicating with coworkers and/or external customers to ensure production meets business requirements and learn strategies for maintaining equipment, tools and workstations. A work-based learning component is provided.

#4
Applications in Manufacturing Technology: This course prepares students for careers in manufacturing and for postsecondary education. The main focus is a core structure study in hydraulics, pneumatics, electrical, material testing, sensors, electric and pneumatic robot operations, and an introduction to programmable logic controllers, measurement, and materials characterization. A work-based learning component is provided.

#5
Safety in the Workplace: Students will develop in-depth skills for maintaining a safe and productive environment including following regulations to perform inspections, participate in emergency response teams to perform emergency drills, identify unsafe conditions and take corrective actions, and provide a safety orientation to train other employees in safe practices and emergency procedures. Students will ensure that equipment is being used safely in the workplace by training others to use equipment safely; by suggesting processes and procedures to support safety; by fulfilling safety and health requirements for maintenance, installation and repair; and by monitoring equipment and operator performance to assure workplace safety and compliance with both company and national regulations.

#6
Workplace Communication: Students will develop verbal and visual skills for communicating with others to ensure that manufacturing maintenance and repairs meet business needs while increasing time efficiency.

#7
Logistics: This course provides fundamentals related to shipping and receiving products and materials. Students will learn the supply chain strategy and networks. They will also learn to check orders for accuracy, to package and unpack materials and products, to load and unload materials and products, and to schedule transportation of products and materials to meet customer needs. Students will examine new and innovative methods of logistics and inventory management for products and information.

#8
Inventory Management: Students will develop skills of managing inventory to meet production requirements. The course content includes use of a plan to monitor the location of materials during the production process, preparation of documents that detail materials movement and inventory count, establishment of lot sizes and reorder points to meet production requirements, and conduction of on-site inventory to ensure productivity, safety, accuracy and teamwork. Students will also identify and report discrepancies in inventory audits in order to change logistics processes and update the inventory to respond to engineering changes.