

## Industrial Engineering and Manufacturing Technologists and Technicians



Industrial Engineering and Manufacturing Technologists and Technicians assist in the development and planning of processes and facilities in manufacturing. The role applies skills and abilities required for strategic planning and ongoing process improvement, which are useful in management, supervisory and other technical roles. Applying technical knowledge for development, design, and analysis, technicians and technologists have experience in tools with functional applications across sectors and industries.

### Skills

Skills are developed through training and experience, and are the practical proficiencies someone possesses. The following are top key skills technicians and technologists employ in their work:

1. Complex Problem Solving
2. Critical Thinking
3. Monitoring
4. Mathematics
5. System Analysis

### Tasks

Tasks are the assigned duties that an occupational group performs in their daily work. The following are the tasks technicians and technologists most regularly encounter:

1. Determine production equipment settings.
2. Study blueprints or other instructions to determine equipment setup requirements.
3. Program equipment to perform production tasks.
4. Create diagrams or blueprints for workpieces or products.
5. Plan production or operational procedures or sequences.

### Technical Knowledge

Technical Knowledge is the understanding of theory and utility of modern tools in a work environment. The following tools are used by technicians and technologists regularly:

1. Computer-aided design & manufacturing software
2. Process mapping and design software
3. Development environment software
4. Analytical or scientific software
5. Industrial control software

### Abilities

Abilities refer to the innate faculties that allow workers to carry out tasks and activities. The following are the top abilities that technicians and technologists possess:

1. Problem Sensitivity
2. Perceptual Speed
3. Inductive & Deductive Reasoning
4. Oral & Written Comprehension
5. Category Flexibility

# Skills Transferability Matrix

FOCAL's Skills Transferability Matrices analyze the transferability of an occupation across a multitude of other occupations on the basis of similarities in **skills, technical knowledge, tasks, and abilities** as outlined by the O\*Net database. It aims to show workers how to leverage their skill set in changing occupations, planning a career path, and transitioning to other industries. It also assists policy makers and educators address changing skill sets and areas of opportunity for workforce entrants in developing industries. Employers can also use this tool in reskilling or upskilling workers to circumvent skills shortages, and reduce the hiring and training challenges.

## Industrial Engineering/Manufacturing Technologists & Technicians

Occupations	Skills	Technical Knowledge	Tasks	Abilities	Total
Civil engineering technologists and technicians	85%	69%	20%	87%	65%
Information systems analysts and consultants	86%	92%	0%	72%	62%
Mechanical engineering technologists and technicians	83%	77%	5%	85%	62%
Computer network technicians	86%	81%	0%	81%	62%
Contractors and supervisors, machining/other metal forming trades	75%	73%	12%	84%	61%
Electrical and electronics engineering technologists and technicians	80%	77%	0%	84%	60%
Chemical technologists and technicians	83%	62%	0%	87%	58%
Supervisors, electrical products manufacturing	74%	62%	12%	83%	57%
Supervisors, other mechanical and metal products manufacturing	74%	62%	12%	83%	57%
Land survey technologists and technicians	84%	54%	4%	85%	57%
Biological technologists and technicians	82%	58%	0%	85%	56%
Power engineers and power systems operators	81%	46%	5%	87%	55%
Broadcast technicians	83%	38%	0%	85%	52%
Contractors and supervisors, mechanic trades	71%	50%	0%	82%	51%
Medical laboratory technologists	82%	27%	0%	85%	48%

After scanning over 2,600 skills, technical competencies, tasks, and abilities of each of the 500 occupations as defined by the National Occupational Classification (NOC) system, a skills transferability matrix for industrial engineering and manufacturing technologists and technicians is produced. In the matrix above, a high score is highlighted in green and indicates the high transferability potential of an attribute of an occupation with that of technologists and technicians. Lower or no transferability areas are marked in red. Technologists and technicians for industry and manufacturing have a very specific functions, and thus share low task transferability with other occupations, even amongst those fulfilling a similar function. They have high skill, ability and technology transferability among other professional technician and technologist roles, with some transferability observed for similar roles outside of manufacturing. Their technology skills also lend transferability to information technology support roles, such as computer network technicians and information system analysts.

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