# Skills Transferability Matrix

**FOCAL Initiative**

# Electrical and Electronic Engineers

Electrical and Electronic Engineers have strong understanding of engineering and professional science principles, including research, design, and analysis. Knowledge of electrical and electronic theory has a wide application, and is sought after in manufacturing of most advanced technologies. Electrical and electronic engineers can leverage their skills in other engineering, professional science, and information technology roles, with prospects of mobility to managerial positions..

## Skills

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

1. Complex Problem Solving
2. Critical Thinking
3. Reading Comprehension
4. Systems Analysis
5. Mathematics

## Technical Knowledge

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

1. Computer-aided design & manufacturing software
2. Development environment software
3. Requirements analysis and system architecture software
4. Analytical or scientific software
5. Database management system software

## Tasks

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

1. Create electrical schematics.
2. Operate computer systems.
3. Confer with technical personnel to prepare designs or operational plans.
4. Design electronic or computer equipment or instrumentation.
5. Investigate system, equipment, or product failures.

## Abilities

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

1. Information Ordering
2. Problem Sensitivity
3. Written & Oral Comprehension and Expression
4. Inductive & Deductive Reasoning
5. Category Flexibility

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.

## Electrical and Electronics Engineers

| Occupations | Skills | Technology | Tasks | Abilities | Total |
|---|---|---|---|---|---|
| Computer engineers (except software engineers and designers) | 93% | 96% | 57% | 94% | 85% |
| Other professional engineers, n.e.c. | 88% | 85% | 27% | 89% | 73% |
| Mechanical engineers | 86% | 74% | 30% | 90% | 70% |
| Chemical engineers | 86% | 81% | 15% | 89% | 68% |
| Information systems analysts and consultants | 85% | 93% | 0% | 87% | 66% |
| Industrial and manufacturing engineers | 85% | 70% | 18% | 87% | 65% |
| Computer network technicians | 81% | 89% | 0% | 88% | 64% |
| Information systems testing technicians | 79% | 89% | 0% | 84% | 63% |
| Electrical and electronics engineering technologists and technicians | 71% | 70% | 31% | 73% | 61% |
| Engineering managers | 71% | 85% | 0% | 85% | 60% |
| Software engineers and designers | 81% | 70% | 0% | 89% | 60% |
| Metallurgical and materials engineers | 87% | 56% | 6% | 91% | 60% |
| Chemists | 84% | 63% | 0% | 92% | 60% |
| Other professional occupations in physical sciences | 82% | 44% | 3% | 89% | 55% |
| Manufacturing managers | 73% | 59% | 0% | 86% | 55% |

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 electrical and electronic engineers 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 electrical and electronic engineers. Lower or no transferability areas are marked in red. Electrical and electronic engineers share transferability with other professional engineering roles, but a notably strong transferability is shared with computer engineers. A secondary area of transferability is information technology roles, with high transferability in the technologies used between both, in addition to their skills and abilities. Moderate upward mobility is observed for electrical and electronic engineers to roles in manufacturing and engineering management, indicating that with additional training they can serve as effective managers.

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