

O*NET Occupations Reference Guide

*So you want to have O*NET in your Career System?*



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O*NET Occupations Reference Guide

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Purpose

The purpose of this Guide is to provide a convenient reference to the different aspects of O*NET that content developers need for including O*NET *occupational* information in a career system; it does *not* cover the O*NET assessment tools. It also is not intended to be a technical manual for software developers or system analysts and programmers; the O*NET *Data Dictionary* has been developed for that purpose.

This Reference Guide includes information on:

- What O*NET is and how it is continuing to be developed
- The information items included in O*NET
- Some ideas about deciding how to include O*NET in your system
- How you can tell what is being updated and how you can update your system

The information in this Guide is based on O*NET version **10.0**. Links are provided to various components of O*NET Center website so that you can continue to update the referenced information in the future.

The O*NET Consortium website covers many more aspects of O*NET than will be covered in this Guide. This Guide will focus on the O*NET *occupations* database. The website also provides information on the assessment tools that are available, and examples of how O*NET is being used in a variety of settings, and many other topics. For more information on the website, go to www.onetcenter.org.

I. O*NET Basics



*A. Where did O*NET come from and why?*

O*NET (the Occupational Information Network) was developed to replace the Dictionary of Occupational Titles (DOT) which had been the public standard description of occupations since the late 1930's. Over the years, the DOT grew to include a massive database describing over 12,000 occupations in great detail. However, the cost of continuing to keep this information up to date became too high, and the descriptions began to be out of date. The U.S. Department of Labor, through the Employment and Training Administration (ETA), began to look at other

alternatives to the DOT in the early 1990's, bringing together an advisory group consisting of experts from many different organizations. The outcome of this group process was to recommend the O*NET occupational information system. The implementation of the new system was an extremely ambitious project, resulting in the first release of the system, O*NET 98, in October 1998.

The intent of the O*NET project is to develop and maintain the occupational descriptions in the system based on a survey of incumbents working in the O*NET occupations. The development of the survey and its procedures, along with obtaining approval from the Office of Management and Budget (OMB), was a time-consuming process (see www.onetcenter.org/dataCollection.html). So in the meantime, a team of job analysts from the DOT program generated an “analyst database” so the system could be implemented on a timely basis.

One of the goals of the O*NET program is to provide a common language for occupations. Part of establishing this common language requires a common taxonomy. In 1998, the Standard Occupational Classification system (SOC) was still in its final stages of revision, so the Occupational Employment Statistics (OES) taxonomy was used in O*NET. Once the SOC was finalized, the first revision of O*NET (versions 3.0 and 3.1) was released in August 2000 and June 2001, converting the O*NET occupations to a SOC-based taxonomy, and making some changes in the occupations in the process.

In the years since then, O*NET has been periodically updated with data obtained from the incumbent survey. The goal is to update the system every six months for 100 occupations with survey data. As of version 10.0 (the production database released in September 2006), 580 O*NET occupations are populated with survey data. Once all of the occupations have been updated with survey data, the goal is to have each occupation updated every five years through a continuous cycle of surveys.

More details about the O*NET database history and update summary may be found at www.onetcenter.org/database.html#updates.

B. *What occupations are in O*NET?*

There are currently 949 occupational titles in O*NET 10.0, of which 812 either have or will have data. The taxonomy is referred to as the O*NET-SOC system to differentiate it from the original OES-based O*NET taxonomy. The list of these occupations, and an explanation of the O*NET-SOC classification system can be found on the O*NET website at www.onetcenter.org/taxonomy.html. *Attachment 1* to this Guide is a table of the O*NET occupations in version 10.0. (O*NET occupations added after version 4.0 that have *not* been surveyed are noted). For sake of simplicity, the O*NET-SOC classification will be referred to as the O*NET classification in this Guide.

As can be seen in *Figure 1* below, there is not always a 1-to-1 ratio between the SOC and the O*NET occupations. The original set of (OES-based) O*NET occupations were more detailed than the SOC in some cases, and did not include all of the final SOC occupations. When the O*NET taxonomy was revised to be based on the SOC, three things therefore happened:

- One, some of the original OES-based occupations were retained, resulting in multiple O*NET occupations being related to one SOC (126 O*NET occupations).
- Two, some “new” SOC occupations were added, but did not have the analyst ratings available for them. These occupations are in O*NET as titles only until incumbent data are collected for them.
- Three, some O*NET occupations (137) are destined to remain as “title only” occupations because they are a) an “all other” residual SOC occupation group, b) a military occupation, or c) the SOC is broken out into finer detail in O*NET.

These relationships are important to understand when labor market information is connected to an O*NET occupation since some data will relate to multiple detailed O*NET occupations.

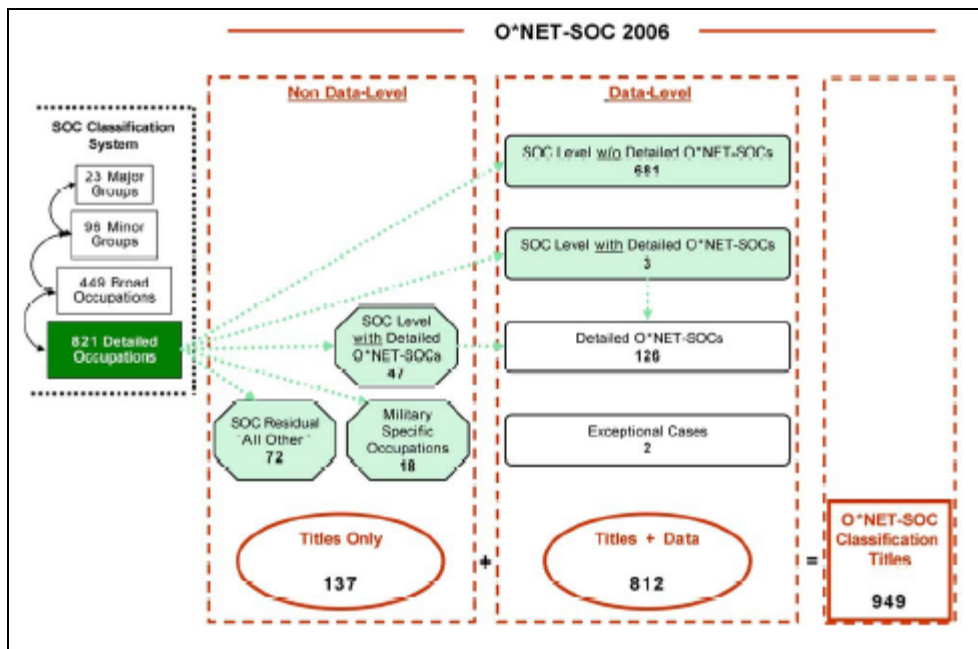


Figure 1

The current O*NET coding system is based on the SOC. Each O*NET-SOC occupation has an 8-digit code, which includes a two digit extension. The first six digits are the same as the related SOC, and the last two indicate whether the O*NET occupation is equal to the SOC or a more detailed occupation. If an O*NET occupation is equal to a SOC, the last two digits will be 00. If it is a more detailed occupation, the last two digits will be .01, .02, etc, depending on how many

detailed occupations there are for the SOC occupation. If the two-digit extension is .99, it denotes the occupation is a SOC residual occupation.

*C. What information is available about an O*NET occupation?*

The information that is included in an O*NET occupational description is based on a **Content Model** that was developed as a part of the process of defining the scope of the Occupational Information Network (O*NET).

The Content Model forms the basis for establishing a common language for the description of occupations. Each occupation in O*NET has the same categories of descriptive information, which allows the occupations to be applied consistently for different uses, and to be compared easily.

The Content Model has 6 major domains of information. Some of these domains are job oriented, and some are worker oriented. *Figure 2* below describes the structure of the Content Model. The domains are: Worker Requirements, Worker Characteristics, Experience Requirements, Occupational Requirements, Occupational Characteristics, and Occupational Specifics. (This information is located at www.onetcenter.org/content.html.)

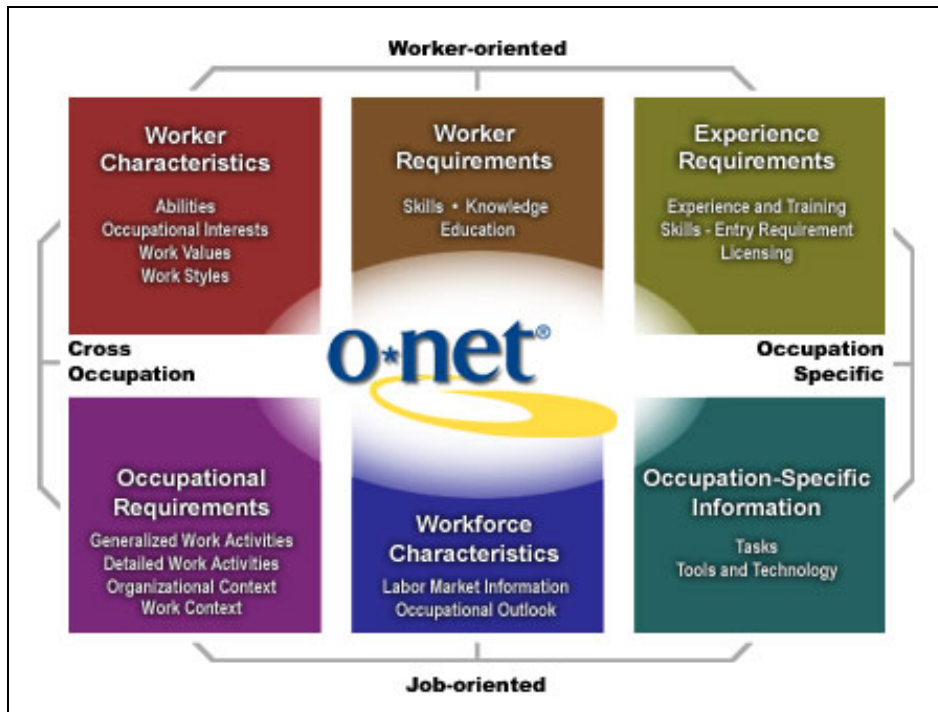


Figure 2

The following brief descriptions are provided for each of the content domains in O*NET. *Attachment 2* to this Guide is a table that contains each of the information elements that are currently in the O*NET 10.0 database. It is important to remember that some of the items in the Content Model are not currently being collected, and some of them are in the process of being collected through the survey process. (A denotation of items in the Content Model that are **not** being collected is included in *Attachment 2*.)

Worker Characteristics Domain (1.0)

The categories of information contained in this domain are those that refer to enduring characteristics that might influence both performance and the capacities to acquire knowledge and skills required for effective work performance. They include:

- ❑ **Abilities:** enduring attributes of the individual that influence performance. There are 52 different abilities that are related to an O*NET occupation. These are divided into 4 broad categories (Cognitive, Psychomotor, Physical, and Sensory) and 15 subcategories. An example of an ability is *Oral Comprehension*.
- ❑ **Interests:** preferences for work environments and outcomes. This topic is divided into Interests and Work Values. There are ratings for 6 different interests and 21 different values. (More information on how the Interest profiles were developed is available in a report, “Development of Occupational Interest Profiles for O*NET (July 1999), that can be downloaded from <http://www.onetcenter.org/resDevelopment.html> - [development](#).) An example of an interest is *Investigative*. An example of a work value is *Independence*.
- ❑ **Work Styles:** a personal characteristic that can affect how well someone does a job. There are 16 different work style descriptors, grouped into 7 categories. An example of a work style is *Cooperation*.

Worker Requirements Domain (2.0)

The categories of information contained in this domain are those that refer to attributes that are acquired through experience or education. They include:

- ❑ **Basic Skills:** developed capacities that facilitate learning and information acquisition. There are 10 different basic skills that are grouped into content skills and process skills. An example of a basic skill is *Reading Comprehension*.
- ❑ **Cross-functional skills:** developed capacities that facilitate performance of activities that occur across jobs. There are 25 different cross-functional skills that are grouped into Social Skills, Complex Problem-Solving Skills, Technical Skills, System Skills, and Resource Management Skills. An example of a Cross-functional skill is *Instructing*.

- ❑ **Knowledges:** organized sets of principles and facts applying in general domains. There are 33 different knowledges organized into 10 categories. An example of a Knowledge item is *Design*.
- ❑ **Education:** prior educational experience required to perform in a job. There are 12 different levels of education. An example of an education level is *High School*. (See *Attachment 3* of this Guide for a description of the different educational levels.)

Experience Requirements Domain (3.0)

The categories of information contained in this domain are those that refer to the requirements related to previous activities, explicitly linked to certain types of work activities. Currently, information is being collected for the following types of data: (See *Attachment 3* for more detail.) (It should also be noted that Licensing and certification information is included here through links to America’s Career InfoNet (ACINet).

- ❑ **Related Work Experience:** having other jobs that prepare for this job. There are 11 levels for this item. An example is “Over 1 month, up to and including 3 months.”
- ❑ **On-site or In-plant Training:** organized classroom study provided by the employer. There are 9 levels for this item. An example is, “Over 2 years, up to and including 4 years.”
- ❑ **On-the-job Training:** serving as a learner or trainee on the job under instruction of a more experienced worker. There are 9 levels for this item. An example is, “Over 6 months, up to and including 1 year.”
- ❑ **Apprenticeship:** serving in a registered U.S. Department of Labor program and receiving a certificate of completion. There are 7 levels for this item. An example is, “Over 5 years and including 6 years.”

Occupational Requirements Domain (4.0)

The categories of information contained in this domain are a comprehensive set of variables or detailed elements that describe what various occupations require. They include:

- ❑ **Generalized Work Activities:** general types of job behaviors occurring on multiple jobs. There are 41 descriptors that are organized into 4 categories: Information Input, Mental Processes, Work Output, and Interacting with Others. An example of a GWA is *Processing Information*.

- **Work Context:** physical and social factors that influence the nature of work. There are 57 descriptors organized into 3 categories: Interpersonal Relationships, Physical Work Conditions, and Structural Job Characteristics. An example of a work context is *Telephone*.

Occupation-Specific Information Domain (5.0)

The information in this domain reflects variables or other information elements that are specific to individual occupations. Currently, the information in this domain consists of the sets of task statements for each data-populated occupation.

Occupational Characteristics Domain (6.0)

The categories of information contained in this domain are variables that define and describe the general characteristics of occupations that may influence occupational requirements. They include links to BLS data on wages and employment trends.

Supplemental Database Files

In addition to the items of information that are contained in the Content Model, there are some other supplemental data files that are available. These include: (More information on these data files is available at www.onetcenter.org/supplemental.html.)

- **Detailed Work Activities (DWAs):** These are statements that relate to work content within a Generalized Work Activity. A research report is available (www.onetcenter.org/dl_files/DWA_summary.pdf), as well as the data file. Each DWA statement relates to multiple O*NET occupations. Examples of their use can be seen in O*NET Online (select an occupation, then select “Details” report view, and click on the “Work Activities: link); an example of this information is shown in *Figure 3* below.

General Work Activity: **Interacting with Computers** – Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information. (Some DWA examples are shown below.)

- Develop or maintain budgeting databases
- Use accounting or bookkeeping software
- Use computers to enter, access and retrieve financial data
- Use spreadsheet software

Figure 3

- ❑ **Emerging Tasks:** These are tasks that were listed by incumbents during the survey process, and by analysis, were identified as emerging tasks. A research report is available (www.onetcenter.org/supplemental.html#emerge), as well as the data file.
- ❑ **Lay Titles:** A list of alternate occupational titles for O*NET occupations. The titles come from diverse sources and are updated regularly. The data file is available for downloading from the Supplemental Database section listed above. An example of the use of these titles may be seen in O*NET OnLine and is illustrated below in *Figure 4*.

Summary Report for: 13-2011.01 - Accountants

Analyze financial information and prepare financial reports to determine or maintain record of assets, liabilities, profit and loss, tax liability, or other financial activities within an organization.

Sample of reported job titles: Staff Accountant, CPA (Certified Public Accountant), General Accountant, Accounting Manager, Business Analyst, Certified Public Accountant, Cost Accountant

Figure 4

- ❑ **Related Occupations:** These were developed and included in the first release of O*NET. They were identified based on a complex algorithmic formula, based on relatedness among selected O*NET characteristics. They are included in O*NET OnLine. A file is available for downloading from the [Supplemental Database section](#).
- ❑ **Tools and Technology:** The tools and technology (T2) file provides information on machines, equipment, tools, and software that workers may use for optimal functioning in a high performance workplace. The information is not exhaustive. Emphasis is placed on cutting edge technologies and emerging workplace practices. Specific examples of tools and technology used within each occupation are organized into a standardized taxonomy (i.e., the United Nations Standard Products and Service Code - UNSPSC), allowing for cross-occupational comparisons and analysis. More information on this taxonomy is available from the UNSP website at www.unspsc.org. A file is available for downloading from the [Supplemental Database section](#).

Below, in *Figure 5*, is an example of the tools and technology identified for the occupation **Machinist**. (Not all occupations have this information component; the information was developed primarily for occupations in “high demand” industries, as identified by the US DOL.)

Tools & Technology

Tools used in this occupation:

- ❑ **Calipers** – Calipers; Dial calipers; Vernier gear tooth calipers; Verniers
- ❑ **Gauges or inspection fixtures** – Dial indicators, Sine bars; Surface gauges
- ❑ **Grinding machines** – Grinders; Sharpeners; Surface grinders; Valve grinding machines
- ❑ **Lathes** – Engine lathes; Flywheel lathes; Lathes; Turret lathes
- ❑ **Milling cutters** – 3-axis computerized numerical control CNC machines; Multi-axis computerized numerical control CNC machines; Undercut tools; Vertical milling machines.

Technology used in this occupation:

- ❑ **Analytical or scientific software** – Armchair Machinist software; CNC Consulting Machinists’ Calculator; EditCNC software; Kentech Kipware Software
- ❑ **Computer-aided design CAD software** – Autodesk AutoCAD: Computer-aided design CAD software
- ❑ **Computer-aided manufacturing CAM software** – CNC Mastercam; CNC TurboCAD/CAM; Computer-aided manufacturing CAM software; JETCAM software.
- ❑ **Office suite software** – Microsoft Office
- ❑ **Project management software** – Kentech Kipware PLN; Kentech Kipware QTE; Kentech Kipware TRK.

Figure 5

D. How can I obtain O*NET data to use in my system?

The O*NET Center maintains a section of their website specifically for people who want to use O*NET in their systems, which is strongly encouraged and supported by the O*NET program. This portion of the website is the Developer's Corner (www.onetcenter.org/developers.html).

The most current version of the O*NET database is available for downloading at www.onetcenter.org/database.html. (You will note that there is also a Spanish version available www.onetcenter.org/db_spanish.html for version 4.0; it has not been updated for later versions.) There are usually two "current" versions available for downloading. One version is called the **Production Database** and it is what is being used in O*NET OnLine. The other version is called the **Development Database** and it is the next version that will be released. These files are also available for downloading at the National Crosswalk Service Center in various formats (<http://www.xwalkcenter.org/onet10/index.html>).

The O*NET database is updated every six months with a new version. The updates are posted in the Data Collection portion of the website in the Data Publication Schedule section (www.onetcenter.org/dataPublication.html). Within the schedule table there are links to xls and pdf files that list the occupations that are updated with each release. *Figure 6*, below, shows this table. The goal is to refresh each occupation in 5-year cycles.

Data Publication Schedule

<i>Target Date</i>	<i>Number of Occupations</i>	<i>Cumulative Total</i>
November 2003 (5.1)	54	54
July 2004 (6.0)	126	180
December 2004 (7.0)	100	280
June 2005 (8.0)	100	380
December 2005 (10.0)	100	480
June 2006 (10.0)	100	580
December 2006 (11.0)	100	
June 2007 (12.0)	101	
December 2007 (13.0)	100	
June 2008 (14.0)	100	

Figure 6

The structure of the O*NET database is based on the Content Model. It is important to closely review the actual database to determine which items of information are available:

- ❑ some items in the Content Model that have not been surveyed, (*see Attachment 2*)
- ❑ some items are available only for surveyed occupations, and
- ❑ some occupations have not yet been surveyed. (*See Attachment 1*)

The table for *Attachment 2*, “Descriptors”, lists all of the information that is in version 10.0 O*NET database. The “Total” table notes, in column D, which information items are not available from the incumbent survey.

Database Files

The information in O*NET is available in a series of files or tables. The most current production database can be downloaded from the O*NET website

www.onetcenter.org/database.html#download. The database can also be downloaded from the National Crosswalk Service Center in Microsoft Access, Visual FoxPro, or SAS/PC versions at www.xwalkcenter.org/onet10.

The Microsoft Access version of the O*NET database includes a series of tables for the different categories of information available. (The *Data Dictionary*, described in a later section of this Guide, provides detailed information about the structure of the data files.)

The following Access tables contain *data* for the different available O*NET descriptors: (This information is also included in the “Domains” table in the *Attachment 2* file.) (The numbers in parentheses denote the database structural location.)

- ❑ Abilities (I.A)
- ❑ Interests (I.B.1)
- ❑ Work Values (1.B.2)
- ❑ Works Styles (1.C)
- ❑ Skills (2.A, 2.B)
- ❑ Knowledge (2.C)
- ❑ Education, Training, and Experience (2.D, 3.A)
- ❑ Work Activities (4.A)
- ❑ Work Context (4.C)
- ❑ Tasks (5.A)
- ❑ Occupation Data (definitions)
- ❑ Job Zones

The following Access tables contain *reference information*:

- ❑ Level Scale Anchors (for selected elements - Abilities, Basic and Cross-functional Skills, Knowledges, Education (categories), Experience and Training (categories), General Work Activities, and Work Context (categories))
- ❑ Job Zone Reference
- ❑ Occupation Level Metadata
- ❑ Content Model Reference

- ❑ Scales Reference
- ❑ Survey Booklet Locations
- ❑ Education Training and Experience Categories
- ❑ Work Context Categories

Sources of Information

The information in O*NET comes from a variety of sources:

- ❑ Legacy Analyst
- ❑ Incumbents
- ❑ Occupational Experts
- ❑ Analysts

The first release of the database (O*NET 98) was based entirely on descriptors developed by DOT analysts, and is referred to as the Analyst database. Until an occupation is surveyed with incumbents, the Legacy Analyst data is retained. Approximately 200 occupations are surveyed each year.

Subsequent versions of the O*NET database, beginning with 5.0 in April 2003, have contained information based on surveys of incumbents. (More information on the survey data collection program is available at www.onetcenter.org/dataCollection.html.)

Not all categories of O*NET information are surveyed; some are developed by analysts and occupational experts. This includes Abilities, Interests, and Work Values. Some categories of information descriptors – Education, Training, and Experience; and Work Styles – were not developed in the Analyst database, and they are being “filled in” by survey data and occupational expert ratings on a gradual basis, so they are not complete in the 10.0 version of the O*NET database. Although task statements were developed by analysts, survey incumbents have an opportunity to review and write in tasks as well, and these are considered for possible updating.

In addition, as noted above and in *Attachment 2*, some categories of information were not included in the Analyst database, nor are they being surveyed at this time. These include: Entry Requirements for Basic Skills and Cross-Functional Skills (3.B and 3.C), Licensing (3.D, covered by a link to ACINet), and Organizational Context (4.B).

Data Dictionary

The O*NET *Data Dictionary* is updated for each new release of O*NET. It may be downloaded or viewed at www.onetcenter.org/dl_files/DataDictionary10_0.pdf. It contains all the technical details needed to understand what data is included in the O*NET database, and how to locate it for use in a particular system that incorporates O*NET information.

The *Data Dictionary* includes a list of all of the files that are available with O*NET data. For each file, the column names, data types, and column contents are described. Data examples for each file are also listed in tables at the end of the publication. *Figure 7* provides an example of a file description.

Column	Type	Column Content
O*NET-SOC Code	VARCHAR2(10)	O*NET-SOC Code
Element ID	VARCHAR2(20)	Ability Outline Position in the Content Model Struct
Element Name	VARCHAR2(150)	Ability Name
Scale ID	VARCHAR2(3)	Scale used as the basis for rating
Data Value	NUMBER(5,2)	Rating associated with the O*NET-SOC occupation
N	NUMBER(4)	Sample Size
Standard Error	NUMBER	Standard Error
Lower CI Bound	NUMBER	Lower 95% Confidence Interval Bound
Upper CI Bound	NUMBER	Upper 95% Confidence Interval Bound
Recommend Suppress	VARCHAR2(1)	Low Precision Indicator (Y=yes, N=no)
Not Relevant	VARCHAR2(1)	Not Relevant for the Occupation (Y=yes, N=no)
Date	DATE	Date when data was updated

Figure 7

Skills
Mathematics – Using mathematics to solve problems.
Active listening – Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

Figure 8

Descriptor Definitions

Each of the data elements in O*NET has a description or definition that describes the meaning of the data element. These can be seen in an O*NET OnLine occupation report as shown in the example above in *Figure 8*. All of these descriptor definitions can be found in the O*NET 10.0 database file entitled Content Model Reference. (They are also included in *Attachment 2* of this Guide.)

Scales

There are a number of scales that are used to collect and display O*NET information. The list of these scales may be found in the O*NET 10.0 database file entitled *Scales Reference*. This file indicates the Scale ID, the Scale Name, and the minimum and maximum values of the scale. It does not, however, tell you which information elements the scales are used for. The table below indicates the use of the scales by information element.

Element ID	Element Name	Element Definition	Scales used	Database Table (10.0)
1	Worker Characteristics			
1.A	Abilities	Enduring attributes of the individual that influence performance	IM(1-5), LV(0-7)	Abilities
1.B	Interests	Preferences for work environments and outcomes	Interests: OI(1-7), IH(0-6) Values:EN(1-5)	Interests Work Values
1.C	Work Styles	Work Styles	IM(1-5)	Work Styles
2	Worker Requirements			
2.A	Basic Skills	Developed capacities that facilitate learning or the more rapid acquisition of knowledge	IM(1-5), LV(0-7)	Skills
2.B	Cross-Functional Skills	Developed capacities that facilitate performance of activities that occur across jobs	IM(1-5), LV(0-7)	Skills
2.C	Knowledge	Organized sets of principles and facts applying in general domains	IM(1-5), LV(0-7)	Knowledge
2.D	Education	Prior educational experience required to perform in a job	RL (12)	Education Training and Experience
3	Experience Requirements			
3.A	Experience and Training	If someone were being hired to perform this job, how much of the following would be required?	OJ (9), PT(9), RW (11)	Education Training and Experience
4	Occupational Requirements			
4.A	Generalized Work Activities	General types of job behaviors occurring on multiple jobs	IM(1-5), LV(0-7)	Work Activities
4.C	Work Context	Physical and social factors that influence the nature of work	CX(1-5), CXP (1-100) on 5 categories	Work Context
5	Occupation-Specific Information			
5.A	Tasks	Occupation-Specific Tasks	IM(1-5)	Tasks

The scales listed in the table above include:

CX – Context	Used for the Work Context file; indicates the rating level for an item on a scale of 1 to 5
CXP - Context Categories	Used for the Work Context file; shows the percent distribution of incumbent responses on a 5 point scale.
EN - Extent	Used for the Work Value file. Indicates the “extent” to which a value applies to an occupation, based on ratings by Subject Matter Experts (SME’s). There are 21 values, grouped into 6 value categories. A “mean extent” is developed for each category, based on the ratings of the values within the category.
IH - Occupational Interest High Point	Used in the Interests file. Indicates the top three interest ratings for the occupation.
IM - Importance	Used in multiple files – Abilities, Work Styles, Skills, Knowledge, Work Activities, and Tasks. Indicates the rating of importance for an item. The incumbent survey asks, “How important is this (item) to the performance of your current job?” and provides a five point scale where 1 is not important, and 5 is extremely important.
LV - Level	Used in multiple files – Abilities, Skills, Knowledge, and Work Activities. Indicates the rating of performance level for an item. The incumbent survey asks, “What level of the (item) is needed to perform your current job?” and provides a seven point scale with “anchors” that provide examples of activities for the different levels. An example of a level 2 anchor for the basic skill of writing is “Take a telephone message.”
OI - Occupational Interests	Used in the Interest file. Indicates the specific rating for each of the 6 interests.
OJ - On-the-Job-Training	Used in the Education Training and Experience file. Indicates the ratings for each of 9 OJT levels.
PT - On-Site or In-Plant Training	Used in the Education Training and Experience file. Indicates the ratings for each of 9 employer training levels.

RL - Required Level of Education Used in the Education Training and Experience file.
Indicates the ratings for each of 12 education levels.

RW - Related Work Experience Used in the Education Training and Experience file.
Indicates the ratings for each of 11 related work
experience levels.

Anchors

There are scale “anchor” statements for the following content areas: 1) Abilities, 2) Education and Training, 3) Knowledge, 4) Skills, 5) Work Activities, and 6) Work Context. For Education and Training, and Work Context, the anchors consist of frequency or amount scales.

For Abilities, Knowledge, Skills, and Work Activities, the anchors consist of example work statements that help the survey respondent better understand the meaning of the scale. All of the scales in these content areas are used for the Level scale. There are usually three anchor statements for a seven-point scale.

The anchor examples are not occupationally specific, they are the same for all of the occupations in O*NET. *Figure 9* is an example from a survey form:

What level of the ability is needed to perform your current job?

To help you understand what we mean by **level**, we provide you with examples of *job-related activities at different levels for each ability. For example:*

What level of ARM-HAND STEADINESS is needed to perform your current job?

Light a candle Thread a needle Cut facets in a diamond

↓ ↓ ↓

① ———— ~~②~~ ———— ③ ———— ④ ———— ⑤ ———— ⑥ ———— ⑦

Highest Level

*Mark your answer by putting an X through the number that represents your answer.
Do not mark on the line between the numbers*

Figure 9

II. Using O*NET in Your Career System

If you want to include O*NET information in your system, there are several basic steps that you will need to take.

- First, you will need to decide how the O*NET occupations match with the occupations in your career system or which O*NET occupations you want to use.
- Next, you will need to decide which descriptive items for an occupation you will want to include in your database.
- And finally, you will want to decide how to present this information in a way that is easy for your users to understand and apply to their career decision making.

This section of the O*NET Guide will provide you with some suggestions for each one of these three implementation areas.

A. Which O*NET occupations should I include in my system?

As of version 10.0 of O*NET, there are 949 occupational titles in O*NET, but not all of them are fully populated with data yet. The first six digits of an O*NET-SOC code are the same as the related SOC occupation. If the related O*NET occupation is more detailed than a SOC occupation, the O*NET-SOC code will have the last two digits extension as different from .00, such as .01, .02.

Attachment 1 for this Guide consists of a table of all of the version 10.0 O*NET-SOC codes and titles, with an indication of whether they are populated with data (as of version 10.0).

If you have coded your occupations by SOC code, you will be in luck, and it will be easy for you to compare the two lists. If not, you may want to begin with comparing titles. You can download the O*NET database at the O*NET Center website (www.onetcenter.org/database.html#download). In the Access database, the “Occupation Data” table will give you a list of all of the O*NET codes, titles, and definitions. You can use this to decide how you want to relate the occupations in your system to the O*NET occupations. You may even decide you want to add some occupations that are in O*NET, and not in your system.

If you already have non-O*NET occupations in your system, you will need to create an internal crosswalk between the occupations in your career system and the O*NET occupations that you want to use to include O*NET data in your system.

B. Which items of O*NET information should I incorporate in my system?

The O*NET database contains a very large amount of information for each of the occupations in O*NET. There are twelve major categories or domains of information, including topics such as Abilities, Interests, Education, and Tasks. (For a full description of the content of the database, see section I.C of this Guide, and *Attachment 2*.)

You may choose to select certain items of information, depending on the purpose of your system, and not include them all. *Attachment 2* provides you with descriptive information for each information element in the database. You can also view full descriptions in O*NET OnLine (<http://online.onetcenter.org/>) and that may help you decide which items would be most pertinent to use.

Once you have selected the items of information, you will need to specify their location in the O*NET database, so you can extract the information for use in your career system. The database item identifiers are listed in *Attachment 2* in the column “Element ID.”

As a reminder, if you choose to include O*NET information in your career system, O*NET requests that you sign a Certification agreement with them.

Special Notice: O*NET Database Product Developers

Individuals may use O*NET database products freely for their own personal use. If use includes developing other products, software, or system applications using O*NET, users are subject to the terms and conditions described in the **O*NET Database Products User Agreement**. Users intending to develop other products, software, or systems applications using O*NET database products should register their use by completing the Certification Form — O*NET Database Products.

Complete the:

[Certification Form — O*NET Database Products](#)

*C. How should I customize O*NET information for users of my system?*

Once you have decided on the occupations and items of information from O*NET that you want to include in your career system, you will have to decide how you want to include these in your career system. You may want to tailor the wording to meet the needs of your users; if you do this, *it is critical that you do not change the meaning of the item definition, or you risk damaging the validity and accuracy of the information.*

You will probably also need to decide on how to format the O*NET information so it will fit well into other information in your system and the total description of an occupation will appear seamless to a user.

III. Keeping Current

A. *How do I know what has changed in O*NET?*

Overview

Typically, a new version of the O*NET database is released every six months, as new data from incumbent surveys are included in the database. And occasionally, there are changes to the O*NET data structure or taxonomy. When you are using O*NET in your career system, you will want to know when these changes occur, and the implications for your system.

The O*NET program is committed to keeping users apprised of developments in the O*NET database. To this end, the O*NET Center website (www.onetcenter.org) has a “Developer’s Corner” section. The figure below contains a list of the information contained in the section. (This section also contains a Development Database link when a new database is available.) The key link here regarding changes is for the Production Database.

<p>Developer's Corner Production Database Spanish Version Database Supplemental Files Career Exploration Tools — Developers Link to Us Graphics</p>
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Another place on the O*NET Center home page where you can get information about changes includes the following links.

<p>What's New About O*NET About Consortium Frequently Asked Questions Contact Us O*NET Updates</p>
--

A third place on the O*NET Center website to check for changes is the Data Collection section at the *Publication Schedule* link.

<p>Data Collection Background OMB Clearance Publication Schedule Association Support Data Collection Survey</p>
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Developer's Corner

The two parts of this section that provide information about changes to the database are the Production Database section and the Development Database section. Both of these contain similar types of information. The Development Database section is not always present; it is active a few months before it goes into production status (which means it is included in O*NET OnLine). The “pre-release” of the Development Database provides system developers with lead time to identify upcoming changes and perform the tasks necessary for including the newest database in their career systems.

The following types of information are provided about the latest databases (both Development and Production):

Highlights of the new version of the database

This section (www.onetcenter.org/database.html#highlights) gives a brief list of the changes in the database, which is usually updated information topics for 100 occupations, based on the latest incumbent survey results. Links to a list of the updated occupations are also included for Excel and PDF file formats.

Release Cycle and Timetable

The O*NET database is updated twice a year, usually for 100 occupations at a time. This section contains a link to the Data Publication Schedule (<http://www.onetcenter.org/dataPublication.html>) that lists the dates for past and future releases of the database. Generally speaking, a “development” database is released in June and December, and then goes into production in September and March. This allows developers to have a 3-month preview of the database before it goes into O*NET OnLine.

O*NET Database and Data Dictionary

The most current O*NET database can be downloaded from the Developer's Corner or the National Crosswalk Service Center's O*NET database page (www.onetcenter.org/database.html#download). The link is specified for a particular version of the database, so it will change each time a new database is released.

The Introduction section of the Data Dictionary includes a list of the Content Changes by version of O*NET, up to and including the current version. This is a very helpful way to identify the general types of changes to look for as you keep your career system current with O*NET. Below is an excerpt from this portion of the Data Dictionary. An example is provided below.

Content Update Since Release 4.0

The O*NET 4.0 database represents the final version of an "analyst ratings only" O*NET Database. The ratings for each of the 900+ O*NET-SOC occupations in the 4.0 database were developed by occupational analysts and every occupation contains ratings for the same range of descriptors. The ongoing O*NET data collection program is gradually replacing these original analyst ratings with ratings derived primarily from job incumbents, as well as, ratings from an updated analyst procedure. The database structure and content changes incorporated in 4.0 were made to make the database consistent with data collection program. For more details about these changes, please refer to "Summary of O*NET 4.0 Content Model and Database" (October 2001) (<http://www.onetcenter.org/resData.html - summary>)

The April 2003 release of the O*NET 5.0 Database represented the first database release to incorporate data from the data collection program. It was the first of planned semiannual updates of the database to update all O*NET-SOC occupations.

Release 5.0 contained the following:

- New and revised Task Statements (455 occupations)
- Addition of Task Statement ratings (54 occupations)
- Updated Abilities, Work Activities, Knowledge, Skills, and Work Context data (54 occupations)
- Addition of Training and Work Experience, and Education data (54 occupations)
- Addition of Work Styles data (54 occupations)
- Addition of metadata to the file structure to specify source of data and date of update
- Addition of Emerging Task Statements
- Addition of Detailed Work Activities

Database History and Update Summary

You may also download a nice report entitled "O*NET Database Update Summary" which provides more detailed information and graphic displays of the updates for each version of O*NET (www.onetcenter.org/dl_files/Database_Update_Summary.pdf).

The History section lists each of the database updates that have been released and the release dates and number of occupations updated. The Update section lists the types of content that were updated, and the number of occupations updated in each release. An example of this is provided below:

New or updated O*NET item	Number of occupations updated with each database release						
	5.0	5.1	6.0	7.0	8.0	9.0	Total
New and revised Task Statements	455	69	140	0	98	0	762
Addition of Task Statement ratings (importance and frequency)	54	0	126	100	100	100	480

C. What's New

This section of the O*NET Center website contains a list of new features to O*NET, including recent research reports. Each example usually contains a link to the additional information.

Examples include:

- Report on the methodology for new and emerging occupations
- Description of O*NET taxonomy changes (example below)
- New features in O*NET OnLine

O*NET-SOC 2006 Taxonomy Advance Notice - (April 2006)

The forthcoming June 2006 release of the O*NET 10.0 development database represents the first broad change and update to the O*NET taxonomy since its conversion to the SOC in 2000. A report summarizing the update and implementation is available in our [Research and Technical Reports](#) section. A lookup table between the O*NET-SOC 2000 and 2006 taxonomies is available for download in our [Supplemental Files](#) section.

In addition to the “What’s New” list, it is a good idea to register with O*NET to get automatic notices of changes to the system. This is found in the “O*NET Updates” link (<http://www.onetcenter.org/news.html>). This will assure that you always get the latest information on any changes to the O*NET system.

B. How can I get my questions answered?

There are also times where you might want to contact the O*NET Center about questions that are not covered in what has been described thus far. This may be accessed in the “Contact Us” section of the website.

We would like to hear from you!

Technical support and customer service for users of O*NET are provided by the O*NET Consortium through staff at the **National Center for O*NET Development**. The Center's staff consists of individuals with acknowledged expertise in the areas of occupational analysis and assessment research and development.

Please send your requests for technical support and any other customer service inquiries to **Customer Service** (onet@ncmail.net).

Questions about the structure and uses of O*NET, information in the database, incorporating O*NET within your system, O*NET products and materials, etc., are welcome. For your convenience, we have listed some [Frequently Asked Questions](#) (FAQs) that you can access for answers to the most common questions we receive.

Attachment 1

*List of O*NET Occupations*

O*NET-SOC 2006 Code	O*NET-SOC 2006 Title	New or not yet surveyed
11-1011.00	Chief Executives	
11-1021.00	General and Operations Managers	
11-1031.00	Legislators	x
11-2011.00	Advertising and Promotions Managers	
11-2021.00	Marketing Managers	
11-2022.00	Sales Managers	
11-2031.00	Public Relations Managers	
11-3011.00	Administrative Services Managers	
11-3021.00	Computer and Information Systems Managers	
11-3031.00	Financial Managers	
11-3031.01	Treasurers and Controllers	
11-3031.02	Financial Managers, Branch or Department	
11-3040.00	Human Resources Managers	
11-3041.00	Compensation and Benefits Managers	
11-3042.00	Training and Development Managers	
11-3049.99	Human Resources Managers, All Other	
11-3051.00	Industrial Production Managers	
11-3061.00	Purchasing Managers	
11-3071.00	Transportation, Storage, and Distribution Managers	
11-3071.01	Transportation Managers	
11-3071.02	Storage and Distribution Managers	
11-9011.00	Farm, Ranch, and Other Agricultural Managers	
11-9011.01	Nursery and Greenhouse Managers	
11-9011.02	Crop and Livestock Managers	
11-9011.03	Aquacultural Managers	
11-9012.00	Farmers and Ranchers	
11-9021.00	Construction Managers	
11-9031.00	Education Administrators, Preschool and Child Care Center/Program	
11-9032.00	Education Administrators, Elementary and Secondary School	
11-9033.00	Education Administrators, Postsecondary	
11-9039.99	Education Administrators, All Other	
11-9041.00	Engineering Managers	
11-9051.00	Food Service Managers	
11-9061.00	Funeral Directors	
11-9071.00	Gaming Managers	
11-9081.00	Lodging Managers	
11-9111.00	Medical and Health Services Managers	
11-9121.00	Natural Sciences Managers	
11-9131.00	Postmasters and Mail Superintendents	
11-9141.00	Property, Real Estate, and Community Association Managers	
11-9151.00	Social and Community Service Managers	
11-9199.99	Managers, All Other	
13-1011.00	Agents and Business Managers of Artists, Performers, and Athletes	

13-1021.00	Purchasing Agents and Buyers, Farm Products	
13-1022.00	Wholesale and Retail Buyers, Except Farm Products	
13-1023.00	Purchasing Agents, Except Wholesale, Retail, and Farm Products	
13-1031.00	Claims Adjusters, Examiners, and Investigators	
13-1031.01	Claims Examiners, Property and Casualty Insurance	
13-1031.02	Insurance Adjusters, Examiners, and Investigators	
13-1032.00	Insurance Appraisers, Auto Damage	
13-1041.00	Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation	
13-1041.01	Environmental Compliance Inspectors	
13-1041.02	Licensing Examiners and Inspectors	
13-1041.03	Equal Opportunity Representatives and Officers	
13-1041.04	Government Property Inspectors and Investigators	
13-1041.06	Coroners	
13-1051.00	Cost Estimators	
13-1061.00	Emergency Management Specialists	
13-1071.00	Employment, Recruitment, and Placement Specialists	
13-1071.01	Employment Interviewers	
13-1071.02	Personnel Recruiters	
13-1072.00	Compensation, Benefits, and Job Analysis Specialists	
13-1073.00	Training and Development Specialists	
13-1079.99	Human Resources, Training, and Labor Relations Specialists, All Other	
13-1081.00	Logisticians	
13-1111.00	Management Analysts	
13-1121.00	Meeting and Convention Planners	
13-1199.99	Business Operations Specialists, All Other	
13-2011.00	Accountants and Auditors	
13-2011.01	Accountants	
13-2011.02	Auditors	
13-2021.00	Appraisers and Assessors of Real Estate	
13-2021.01	Assessors	
13-2021.02	Appraisers, Real Estate	
13-2031.00	Budget Analysts	
13-2041.00	Credit Analysts	
13-2051.00	Financial Analysts	
13-2052.00	Personal Financial Advisors	
13-2053.00	Insurance Underwriters	
13-2061.00	Financial Examiners	
13-2071.00	Loan Counselors	
13-2072.00	Loan Officers	
13-2081.00	Tax Examiners, Collectors, and Revenue Agents	
13-2082.00	Tax Preparers	
13-2099.99	Financial Specialists, All Other	
15-1011.00	Computer and Information Scientists, Research	x
15-1021.00	Computer Programmers	
15-1031.00	Computer Software Engineers, Applications	
15-1032.00	Computer Software Engineers, Systems Software	
15-1041.00	Computer Support Specialists	
15-1051.00	Computer Systems Analysts	
15-1061.00	Database Administrators	

15-1071.00	Network and Computer Systems Administrators	
15-1071.01	Computer Security Specialists	
15-1081.00	Network Systems and Data Communications Analysts	
15-1099.01	Software Quality Assurance Engineers and Testers	new
15-1099.02	Computer Systems Engineers/Architects	new
15-1099.03	Network Designers	new
15-1099.04	Web Developers	new
15-1099.05	Web Administrators	new
15-1099.99	Computer Specialists, All Other	
15-2011.00	Actuaries	
15-2021.00	Mathematicians	
15-2031.00	Operations Research Analysts	
15-2041.00	Statisticians	
15-2091.00	Mathematical Technicians	
15-2099.99	Mathematical Science Occupations, All Other	
17-1011.00	Architects, Except Landscape and Naval	
17-1012.00	Landscape Architects	
17-1021.00	Cartographers and Photogrammetrists	
17-1022.00	Surveyors	
17-2011.00	Aerospace Engineers	
17-2021.00	Agricultural Engineers	
17-2031.00	Biomedical Engineers	
17-2041.00	Chemical Engineers	
17-2051.00	Civil Engineers	
17-2061.00	Computer Hardware Engineers	
17-2071.00	Electrical Engineers	
17-2072.00	Electronics Engineers, Except Computer	
17-2081.00	Environmental Engineers	
17-2111.00	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	
17-2111.01	Industrial Safety and Health Engineers	
17-2111.02	Fire-Prevention and Protection Engineers	
17-2111.03	Product Safety Engineers	
17-2112.00	Industrial Engineers	
17-2121.00	Marine Engineers and Naval Architects	
17-2121.01	Marine Engineers	
17-2121.02	Marine Architects	
17-2131.00	Materials Engineers	
17-2141.00	Mechanical Engineers	
17-2151.00	Mining and Geological Engineers, Including Mining Safety Engineers	
17-2161.00	Nuclear Engineers	
17-2171.00	Petroleum Engineers	
17-2199.99	Engineers, All Other	
17-3011.00	Architectural and Civil Drafters	
17-3011.01	Architectural Drafters	
17-3011.02	Civil Drafters	
17-3012.00	Electrical and Electronics Drafters	
17-3012.01	Electronic Drafters	
17-3012.02	Electrical Drafters	
17-3013.00	Mechanical Drafters	
17-3019.99	Drafters, All Other	

17-3021.00	Aerospace Engineering and Operations Technicians
17-3022.00	Civil Engineering Technicians
17-3023.00	Electrical and Electronic Engineering Technicians
17-3023.01	Electronics Engineering Technicians
17-3023.03	Electrical Engineering Technicians
17-3024.00	Electro-Mechanical Technicians
17-3025.00	Environmental Engineering Technicians
17-3026.00	Industrial Engineering Technicians
17-3027.00	Mechanical Engineering Technicians
17-3029.99	Engineering Technicians, Except Drafters, All Other
17-3031.00	Surveying and Mapping Technicians
17-3031.01	Surveying Technicians
17-3031.02	Mapping Technicians
19-1011.00	Animal Scientists
19-1012.00	Food Scientists and Technologists
19-1013.00	Soil and Plant Scientists
19-1020.01	Biologists
19-1021.00	Biochemists and Biophysicists
19-1022.00	Microbiologists
19-1023.00	Zoologists and Wildlife Biologists
19-1029.99	Biological Scientists, All Other
19-1031.00	Conservation Scientists
19-1031.01	Soil and Water Conservationists
19-1031.02	Range Managers
19-1031.03	Park Naturalists
19-1032.00	Foresters
19-1041.00	Epidemiologists
19-1042.00	Medical Scientists, Except Epidemiologists
19-1099.99	Life Scientists, All Other
19-2011.00	Astronomers
19-2012.00	Physicists
19-2021.00	Atmospheric and Space Scientists
19-2031.00	Chemists
19-2032.00	Materials Scientists
19-2041.00	Environmental Scientists and Specialists, Including Health
19-2042.00	Geoscientists, Except Hydrologists and Geographers
19-2043.00	Hydrologists
19-2099.99	Physical Scientists, All Other
19-3011.00	Economists
19-3021.00	Market Research Analysts
19-3022.00	Survey Researchers
19-3031.00	Clinical, Counseling, and School Psychologists
19-3031.01	School Psychologists
19-3031.02	Clinical Psychologists
19-3031.03	Counseling Psychologists
19-3032.00	Industrial-Organizational Psychologists
19-3039.99	Psychologists, All Other
19-3041.00	Sociologists
19-3051.00	Urban and Regional Planners
19-3091.00	Anthropologists and Archeologists
19-3091.01	Anthropologists

19-3091.02	Archeologists	
19-3092.00	Geographers	
19-3093.00	Historians	
19-3094.00	Political Scientists	
19-3099.99	Social Scientists and Related Workers, All Other	
19-4011.00	Agricultural and Food Science Technicians	
19-4011.01	Agricultural Technicians	
19-4011.02	Food Science Technicians	
19-4021.00	Biological Technicians	
19-4031.00	Chemical Technicians	
19-4041.00	Geological and Petroleum Technicians	
19-4041.01	Geophysical Data Technicians	
19-4041.02	Geological Sample Test Technicians	
19-4051.00	Nuclear Technicians	
19-4051.01	Nuclear Equipment Operation Technicians	
19-4051.02	Nuclear Monitoring Technicians	
19-4061.00	Social Science Research Assistants	x
19-4061.01	City and Regional Planning Aides	
19-4091.00	Environmental Science and Protection Technicians, Including Health	
19-4092.00	Forensic Science Technicians	
19-4093.00	Forest and Conservation Technicians	
19-4099.99	Life, Physical, and Social Science Technicians, All Other	
21-1011.00	Substance Abuse and Behavioral Disorder Counselors	
21-1012.00	Educational, Vocational, and School Counselors	
21-1013.00	Marriage and Family Therapists	
21-1014.00	Mental Health Counselors	
21-1015.00	Rehabilitation Counselors	
21-1019.99	Counselors, All Other	
21-1021.00	Child, Family, and School Social Workers	
21-1022.00	Medical and Public Health Social Workers	
21-1023.00	Mental Health and Substance Abuse Social Workers	
21-1029.99	Social Workers, All Other	
21-1091.00	Health Educators	
21-1092.00	Probation Officers and Correctional Treatment Specialists	
21-1093.00	Social and Human Service Assistants	
21-1099.99	Community and Social Service Specialists, All Other	
21-2011.00	Clergy	
21-2021.00	Directors, Religious Activities and Education	
21-2099.99	Religious Workers, All Other	
23-1011.00	Lawyers	
23-1021.00	Administrative Law Judges, Adjudicators, and Hearing Officers	
23-1022.00	Arbitrators, Mediators, and Conciliators	
23-1023.00	Judges, Magistrate Judges, and Magistrates	
23-2011.00	Paralegals and Legal Assistants	
23-2091.00	Court Reporters	
23-2092.00	Law Clerks	
23-2093.00	Title Examiners, Abstractors, and Searchers	
23-2099.99	Legal Support Workers, All Other	

25-1011.00	Business Teachers, Postsecondary
25-1021.00	Computer Science Teachers, Postsecondary
25-1022.00	Mathematical Science Teachers, Postsecondary
25-1031.00	Architecture Teachers, Postsecondary
25-1032.00	Engineering Teachers, Postsecondary
25-1041.00	Agricultural Sciences Teachers, Postsecondary
25-1042.00	Biological Science Teachers, Postsecondary
25-1043.00	Forestry and Conservation Science Teachers, Postsecondary
25-1051.00	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary
25-1052.00	Chemistry Teachers, Postsecondary
25-1053.00	Environmental Science Teachers, Postsecondary
25-1054.00	Physics Teachers, Postsecondary
25-1061.00	Anthropology and Archeology Teachers, Postsecondary
25-1062.00	Area, Ethnic, and Cultural Studies Teachers, Postsecondary
25-1063.00	Economics Teachers, Postsecondary
25-1064.00	Geography Teachers, Postsecondary
25-1065.00	Political Science Teachers, Postsecondary
25-1066.00	Psychology Teachers, Postsecondary
25-1067.00	Sociology Teachers, Postsecondary
25-1069.99	Social Sciences Teachers, Postsecondary, All Other
25-1071.00	Health Specialties Teachers, Postsecondary
25-1072.00	Nursing Instructors and Teachers, Postsecondary
25-1081.00	Education Teachers, Postsecondary
25-1082.00	Library Science Teachers, Postsecondary
25-1111.00	Criminal Justice and Law Enforcement Teachers, Postsecondary
25-1112.00	Law Teachers, Postsecondary
25-1113.00	Social Work Teachers, Postsecondary
25-1121.00	Art, Drama, and Music Teachers, Postsecondary
25-1122.00	Communications Teachers, Postsecondary
25-1123.00	English Language and Literature Teachers, Postsecondary
25-1124.00	Foreign Language and Literature Teachers, Postsecondary
25-1125.00	History Teachers, Postsecondary
25-1126.00	Philosophy and Religion Teachers, Postsecondary
25-1191.00	Graduate Teaching Assistants
25-1192.00	Home Economics Teachers, Postsecondary
25-1193.00	Recreation and Fitness Studies Teachers, Postsecondary
25-1194.00	Vocational Education Teachers, Postsecondary
25-1199.99	Postsecondary Teachers, All Other
25-2011.00	Preschool Teachers, Except Special Education
25-2012.00	Kindergarten Teachers, Except Special Education
25-2021.00	Elementary School Teachers, Except Special Education
25-2022.00	Middle School Teachers, Except Special and Vocational Education
25-2023.00	Vocational Education Teachers, Middle School

25-2031.00	Secondary School Teachers, Except Special and Vocational Education
25-2032.00	Vocational Education Teachers, Secondary School
25-2041.00	Special Education Teachers, Preschool, Kindergarten, and Elementary School
25-2042.00	Special Education Teachers, Middle School
25-2043.00	Special Education Teachers, Secondary School
25-3011.00	Adult Literacy, Remedial Education, and GED Teachers and Instructors
25-3021.00	Self-Enrichment Education Teachers
25-3099.99	Teachers and Instructors, All Other
25-4011.00	Archivists
25-4012.00	Curators
25-4013.00	Museum Technicians and Conservators
25-4021.00	Librarians
25-4031.00	Library Technicians
25-9011.00	Audio-Visual Collections Specialists
25-9021.00	Farm and Home Management Advisors
25-9031.00	Instructional Coordinators
25-9041.00	Teacher Assistants
25-9099.99	Education, Training, and Library Workers, All Other
27-1011.00	Art Directors
27-1012.00	Craft Artists
27-1013.00	Fine Artists, Including Painters, Sculptors, and Illustrators
27-1014.00	Multi-Media Artists and Animators
27-1019.99	Artists and Related Workers, All Other
27-1021.00	Commercial and Industrial Designers
27-1022.00	Fashion Designers
27-1023.00	Floral Designers
27-1024.00	Graphic Designers
27-1025.00	Interior Designers
27-1026.00	Merchandise Displayers and Window Trimmers
27-1027.00	Set and Exhibit Designers
27-1029.99	Designers, All Other
27-2011.00	Actors
27-2012.00	Producers and Directors
27-2012.01	Producers
27-2012.02	Directors- Stage, Motion Pictures, Television, and Radio
27-2012.03	Program Directors
27-2012.04	Talent Directors
27-2012.05	Technical Directors/Managers
27-2021.00	Athletes and Sports Competitors
27-2022.00	Coaches and Scouts
27-2023.00	Umpires, Referees, and Other Sports Officials
27-2031.00	Dancers
27-2032.00	Choreographers
27-2041.00	Music Directors and Composers
27-2041.01	Music Directors
27-2041.04	Music Composers and Arrangers
27-2042.00	Musicians and Singers
27-2042.01	Singers
27-2042.02	Musicians, Instrumental

27-2099.99	Entertainers and Performers, Sports and Related Workers, All Other
27-3011.00	Radio and Television Announcers
27-3012.00	Public Address System and Other Announcers
27-3021.00	Broadcast News Analysts
27-3022.00	Reporters and Correspondents
27-3031.00	Public Relations Specialists
27-3041.00	Editors
27-3042.00	Technical Writers
27-3043.00	Writers and Authors
27-3043.04	Copy Writers
27-3043.05	Poets, Lyricists and Creative Writers
27-3091.00	Interpreters and Translators
27-3099.99	Media and Communication Workers, All Other
27-4011.00	Audio and Video Equipment Technicians
27-4012.00	Broadcast Technicians
27-4013.00	Radio Operators
27-4014.00	Sound Engineering Technicians
27-4021.00	Photographers
27-4031.00	Camera Operators, Television, Video, and Motion Picture
27-4032.00	Film and Video Editors
27-4099.99	Media and Communication Equipment Workers, All Other
29-1011.00	Chiropractors
29-1021.00	Dentists, General
29-1022.00	Oral and Maxillofacial Surgeons
29-1023.00	Orthodontists
29-1024.00	Prosthodontists
29-1029.99	Dentists, All Other Specialists
29-1031.00	Dietitians and Nutritionists
29-1041.00	Optometrists
29-1051.00	Pharmacists
29-1061.00	Anesthesiologists
29-1062.00	Family and General Practitioners
29-1063.00	Internists, General
29-1064.00	Obstetricians and Gynecologists
29-1065.00	Pediatricians, General
29-1066.00	Psychiatrists
29-1067.00	Surgeons
29-1069.99	Physicians and Surgeons, All Other
29-1071.00	Physician Assistants
29-1081.00	Podiatrists
29-1111.00	Registered Nurses
29-1121.00	Audiologists
29-1122.00	Occupational Therapists
29-1123.00	Physical Therapists
29-1124.00	Radiation Therapists
29-1125.00	Recreational Therapists
29-1126.00	Respiratory Therapists
29-1127.00	Speech-Language Pathologists
29-1129.99	Therapists, All Other
29-1131.00	Veterinarians

29-1199.99	Health Diagnosing and Treating Practitioners, All Other	
29-2011.00	Medical and Clinical Laboratory Technologists	
29-2012.00	Medical and Clinical Laboratory Technicians	
29-2021.00	Dental Hygienists	
29-2031.00	Cardiovascular Technologists and Technicians	
29-2032.00	Diagnostic Medical Sonographers	
29-2033.00	Nuclear Medicine Technologists	
29-2034.00	Radiologic Technologists and Technicians	
29-2034.01	Radiologic Technologists	
29-2034.02	Radiologic Technicians	
29-2041.00	Emergency Medical Technicians and Paramedics	
29-2051.00	Dietetic Technicians	
29-2052.00	Pharmacy Technicians	
29-2053.00	Psychiatric Technicians	
29-2054.00	Respiratory Therapy Technicians	
29-2055.00	Surgical Technologists	
29-2056.00	Veterinary Technologists and Technicians	
29-2061.00	Licensed Practical and Licensed Vocational Nurses	
29-2071.00	Medical Records and Health Information Technicians	
29-2081.00	Opticians, Dispensing	
29-2091.00	Orthotists and Prosthetists	
29-2099.99	Health Technologists and Technicians, All Other	
29-9011.00	Occupational Health and Safety Specialists	
29-9012.00	Occupational Health and Safety Technicians	x
29-9091.00	Athletic Trainers	
29-9099.99	Healthcare Practitioners and Technical Workers, All Other	
31-1011.00	Home Health Aides	
31-1012.00	Nursing Aides, Orderlies, and Attendants	
31-1013.00	Psychiatric Aides	
31-2011.00	Occupational Therapist Assistants	
31-2012.00	Occupational Therapist Aides	
31-2021.00	Physical Therapist Assistants	
31-2022.00	Physical Therapist Aides	
31-9011.00	Massage Therapists	
31-9091.00	Dental Assistants	
31-9092.00	Medical Assistants	
31-9093.00	Medical Equipment Preparers	
31-9094.00	Medical Transcriptionists	
31-9095.00	Pharmacy Aides	
31-9096.00	Veterinary Assistants and Laboratory Animal Caretakers	
31-9099.99	Healthcare Support Workers, All Other	
33-1011.00	First-Line Supervisors/Managers of Correctional Officers	
33-1012.00	First-Line Supervisors/Managers of Police and Detectives	
33-1021.00	First-Line Supervisors/Managers of Fire Fighting and Prevention Workers	
33-1021.01	Municipal Fire Fighting and Prevention Supervisors	
33-1021.02	Forest Fire Fighting and Prevention Supervisors	

33-1099.99	First-Line Supervisors/Managers, Protective Service Workers, All Other	
33-2011.00	Fire Fighters	
33-2011.01	Municipal Fire Fighters	
33-2011.02	Forest Fire Fighters	
33-2021.00	Fire Inspectors and Investigators	
33-2021.01	Fire Inspectors	
33-2021.02	Fire Investigators	
33-2022.00	Forest Fire Inspectors and Prevention Specialists	
33-3011.00	Bailiffs	
33-3012.00	Correctional Officers and Jailers	
33-3021.00	Detectives and Criminal Investigators	
33-3021.01	Police Detectives	
33-3021.02	Police Identification and Records Officers	
33-3021.03	Criminal Investigators and Special Agents	
33-3021.05	Immigration and Customs Inspectors	
33-3031.00	Fish and Game Wardens	
33-3041.00	Parking Enforcement Workers	
33-3051.00	Police and Sheriff's Patrol Officers	
33-3051.01	Police Patrol Officers	
33-3051.03	Sheriffs and Deputy Sheriffs	
33-3052.00	Transit and Railroad Police	
33-9011.00	Animal Control Workers	
33-9021.00	Private Detectives and Investigators	
33-9031.00	Gaming Surveillance Officers and Gaming Investigators	
33-9032.00	Security Guards	
33-9091.00	Crossing Guards	
33-9092.00	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	
33-9099.01	Transportation Security Screeners	new
33-9099.99	Protective Service Workers, All Other	
35-1011.00	Chefs and Head Cooks	
35-1012.00	First-Line Supervisors/Managers of Food Preparation and Serving Workers	
35-2011.00	Cooks, Fast Food	
35-2012.00	Cooks, Institution and Cafeteria	
35-2013.00	Cooks, Private Household	
35-2014.00	Cooks, Restaurant	
35-2015.00	Cooks, Short Order	
35-2019.99	Cooks, All Other	
35-2021.00	Food Preparation Workers	
35-3011.00	Bartenders	
35-3021.00	Combined Food Preparation and Serving Workers, Including Fast Food	
35-3022.00	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	
35-3031.00	Waiters and Waitresses	
35-3041.00	Food Servers, Nonrestaurant	
35-9011.00	Dining Room and Cafeteria Attendants and Bartender Helpers	
35-9021.00	Dishwashers	
35-9031.00	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	

35-9099.99	Food Preparation and Serving Related Workers, All Other	
37-1011.00	First-Line Supervisors/Managers of Housekeeping and Janitorial Workers	
37-1012.00	First-Line Supervisors/Managers of Landscaping, Lawn Service, and Groundskeeping Workers	
37-2011.00	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	
37-2012.00	Maids and Housekeeping Cleaners	
37-2019.99	Building Cleaning Workers, All Other	
37-2021.00	Pest Control Workers	
37-3011.00	Landscaping and Groundskeeping Workers	
37-3012.00	Pesticide Handlers, Sprayers, and Applicators, Vegetation	
37-3013.00	Tree Trimmers and Pruners	
37-3019.99	Grounds Maintenance Workers, All Other	
39-1011.00	Gaming Supervisors	
39-1012.00	Slot Key Persons	
39-1021.00	First-Line Supervisors/Managers of Personal Service Workers	
39-2011.00	Animal Trainers	
39-2021.00	Nonfarm Animal Caretakers	
39-3011.00	Gaming Dealers	
39-3012.00	Gaming and Sports Book Writers and Runners	
39-3019.99	Gaming Service Workers, All Other	
39-3021.00	Motion Picture Projectionists	
39-3031.00	Ushers, Lobby Attendants, and Ticket Takers	
39-3091.00	Amusement and Recreation Attendants	
39-3092.00	Costume Attendants	
39-3093.00	Locker Room, Coatroom, and Dressing Room Attendants	
39-3099.99	Entertainment Attendants and Related Workers, All Other	
39-4011.00	Embalmers	
39-4021.00	Funeral Attendants	
39-5011.00	Barbers	
39-5012.00	Hairdressers, Hairstylists, and Cosmetologists	
39-5091.00	Makeup Artists, Theatrical and Performance	
39-5092.00	Manicurists and Pedicurists	
39-5093.00	Shampooers	x
39-5094.00	Skin Care Specialists	
39-6011.00	Baggage Porters and Bellhops	
39-6012.00	Concierges	
39-6021.00	Tour Guides and Escorts	
39-6022.00	Travel Guides	
39-6031.00	Flight Attendants	
39-6032.00	Transportation Attendants, Except Flight Attendants and Baggage Porters	
39-9011.00	Child Care Workers	
39-9011.01	Nannies	
39-9021.00	Personal and Home Care Aides	
39-9031.00	Fitness Trainers and Aerobics Instructors	
39-9032.00	Recreation Workers	
39-9041.00	Residential Advisors	

39-9099.99	Personal Care and Service Workers, All Other
41-1011.00	First-Line Supervisors/Managers of Retail Sales Workers
41-1012.00	First-Line Supervisors/Managers of Non-Retail Sales Workers
41-2011.00	Cashiers
41-2012.00	Gaming Change Persons and Booth Cashiers
41-2021.00	Counter and Rental Clerks
41-2022.00	Parts Salespersons
41-2031.00	Retail Salespersons
41-3011.00	Advertising Sales Agents
41-3021.00	Insurance Sales Agents
41-3031.00	Securities, Commodities, and Financial Services Sales Agents
41-3031.01	Sales Agents, Securities and Commodities
41-3031.02	Sales Agents, Financial Services
41-3041.00	Travel Agents
41-3099.99	Sales Representatives, Services, All Other
41-4011.00	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products
41-4012.00	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
41-9011.00	Demonstrators and Product Promoters
41-9012.00	Models
41-9021.00	Real Estate Brokers
41-9022.00	Real Estate Sales Agents
41-9031.00	Sales Engineers
41-9041.00	Telemarketers
41-9091.00	Door-To-Door Sales Workers, News and Street Vendors, and Related Workers
41-9099.99	Sales and Related Workers, All Other
43-1011.00	First-Line Supervisors/Managers of Office and Administrative Support Workers
43-2011.00	Switchboard Operators, Including Answering Service
43-2021.00	Telephone Operators
43-2099.99	Communications Equipment Operators, All Other
43-3011.00	Bill and Account Collectors
43-3021.00	Billing and Posting Clerks and Machine Operators
43-3021.01	Statement Clerks
43-3021.02	Billing, Cost, and Rate Clerks
43-3021.03	Billing, Posting, and Calculating Machine Operators
43-3031.00	Bookkeeping, Accounting, and Auditing Clerks
43-3041.00	Gaming Cage Workers
43-3051.00	Payroll and Timekeeping Clerks
43-3061.00	Procurement Clerks
43-3071.00	Tellers
43-4011.00	Brokerage Clerks
43-4021.00	Correspondence Clerks
43-4031.00	Court, Municipal, and License Clerks
43-4031.01	Court Clerks
43-4031.02	Municipal Clerks
43-4031.03	License Clerks

43-4041.00	Credit Authorizers, Checkers, and Clerks
43-4041.01	Credit Authorizers
43-4041.02	Credit Checkers
43-4051.00	Customer Service Representatives
43-4061.00	Eligibility Interviewers, Government Programs
43-4071.00	File Clerks
43-4081.00	Hotel, Motel, and Resort Desk Clerks
43-4111.00	Interviewers, Except Eligibility and Loan
43-4121.00	Library Assistants, Clerical
43-4131.00	Loan Interviewers and Clerks
43-4141.00	New Accounts Clerks
43-4151.00	Order Clerks
43-4161.00	Human Resources Assistants, Except Payroll and Timekeeping
43-4171.00	Receptionists and Information Clerks
43-4181.00	Reservation and Transportation Ticket Agents and Travel Clerks
43-4199.99	Information and Record Clerks, All Other
43-5011.00	Cargo and Freight Agents
43-5021.00	Couriers and Messengers
43-5031.00	Police, Fire, and Ambulance Dispatchers
43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
43-5041.00	Meter Readers, Utilities
43-5051.00	Postal Service Clerks
43-5052.00	Postal Service Mail Carriers
43-5053.00	Postal Service Mail Sorters, Processors, and Processing Machine Operators
43-5061.00	Production, Planning, and Expediting Clerks
43-5071.00	Shipping, Receiving, and Traffic Clerks
43-5081.00	Stock Clerks and Order Fillers
43-5081.01	Stock Clerks, Sales Floor
43-5081.02	Marking Clerks
43-5081.03	Stock Clerks- Stockroom, Warehouse, or Storage Yard
43-5081.04	Order Fillers, Wholesale and Retail Sales
43-5111.00	Weighers, Measurers, Checkers, and Samplers, Recordkeeping
43-6011.00	Executive Secretaries and Administrative Assistants
43-6012.00	Legal Secretaries
43-6013.00	Medical Secretaries
43-6014.00	Secretaries, Except Legal, Medical, and Executive
43-9011.00	Computer Operators
43-9021.00	Data Entry Keyers
43-9022.00	Word Processors and Typists
43-9031.00	Desktop Publishers
43-9041.00	Insurance Claims and Policy Processing Clerks
43-9041.01	Insurance Claims Clerks
43-9041.02	Insurance Policy Processing Clerks
43-9051.00	Mail Clerks and Mail Machine Operators, Except Postal Service
43-9061.00	Office Clerks, General
43-9071.00	Office Machine Operators, Except Computer
43-9081.00	Proofreaders and Copy Markers

43-9111.00	Statistical Assistants	
43-9199.99	Office and Administrative Support Workers, All Other	
45-1011.00	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	
45-1011.05	First-Line Supervisors/Managers of Logging Workers	
45-1011.06	First-Line Supervisors/Managers of Aquacultural Workers	
45-1011.07	First-Line Supervisors/Managers of Agricultural Crop and Horticultural Workers	
45-1011.08	First-Line Supervisors/Managers of Animal Husbandry and Animal Care Workers	
45-1012.00	Farm Labor Contractors	x
45-2011.00	Agricultural Inspectors	
45-2021.00	Animal Breeders	
45-2041.00	Graders and Sorters, Agricultural Products	
45-2091.00	Agricultural Equipment Operators	
45-2092.00	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	
45-2092.01	Nursery Workers	
45-2092.02	Farmworkers and Laborers, Crop	
45-2093.00	Farmworkers, Farm and Ranch Animals	
45-2099.99	Agricultural Workers, All Other	
45-3011.00	Fishers and Related Fishing Workers	
45-3021.00	Hunters and Trappers	
45-4011.00	Forest and Conservation Workers	
45-4021.00	Fallers	
45-4022.00	Logging Equipment Operators	
45-4023.00	Log Graders and Scalers	
45-4029.99	Logging Workers, All Other	
47-1011.00	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	
47-2011.00	Boilermakers	
47-2021.00	Brickmasons and Blockmasons	
47-2022.00	Stonemasons	
47-2031.00	Carpenters	
47-2031.01	Construction Carpenters	
47-2031.02	Rough Carpenters	
47-2041.00	Carpet Installers	
47-2042.00	Floor Layers, Except Carpet, Wood, and Hard Tiles	
47-2043.00	Floor Sanders and Finishers	
47-2044.00	Tile and Marble Setters	
47-2051.00	Cement Masons and Concrete Finishers	
47-2053.00	Terrazzo Workers and Finishers	
47-2061.00	Construction Laborers	
47-2071.00	Paving, Surfacing, and Tamping Equipment Operators	
47-2072.00	Pile-Driver Operators	
47-2073.00	Operating Engineers and Other Construction Equipment Operators	
47-2081.00	Drywall and Ceiling Tile Installers	
47-2082.00	Tapers	
47-2111.00	Electricians	

47-2121.00	Glaziers	
47-2131.00	Insulation Workers, Floor, Ceiling, and Wall	
47-2132.00	Insulation Workers, Mechanical	
47-2141.00	Painters, Construction and Maintenance	
47-2142.00	Paperhangers	
47-2151.00	Pipelayers	
47-2152.00	Plumbers, Pipefitters, and Steamfitters	
47-2152.01	Pipe Fitters and Steamfitters	
47-2152.02	Plumbers	
47-2161.00	Plasterers and Stucco Masons	
47-2171.00	Reinforcing Iron and Rebar Workers	
47-2181.00	Roofers	
47-2211.00	Sheet Metal Workers	
47-2221.00	Structural Iron and Steel Workers	
47-3011.00	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	
47-3012.00	Helpers--Carpenters	
47-3013.00	Helpers--Electricians	
47-3014.00	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	
47-3015.00	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	
47-3016.00	Helpers--Roofers	x
47-3019.99	Helpers, Construction Trades, All Other	
47-4011.00	Construction and Building Inspectors	
47-4021.00	Elevator Installers and Repairers	
47-4031.00	Fence Erectors	
47-4041.00	Hazardous Materials Removal Workers	
47-4051.00	Highway Maintenance Workers	
47-4061.00	Rail-Track Laying and Maintenance Equipment Operators	
47-4071.00	Septic Tank Servicers and Sewer Pipe Cleaners	
47-4091.00	Segmental Pavers	
47-4099.99	Construction and Related Workers, All Other	
47-5011.00	Derrick Operators, Oil and Gas	
47-5012.00	Rotary Drill Operators, Oil and Gas	
47-5013.00	Service Unit Operators, Oil, Gas, and Mining	
47-5021.00	Earth Drillers, Except Oil and Gas	
47-5031.00	Explosives Workers, Ordnance Handling Experts, and Blasters	
47-5041.00	Continuous Mining Machine Operators	
47-5042.00	Mine Cutting and Channeling Machine Operators	
47-5049.99	Mining Machine Operators, All Other	
47-5051.00	Rock Splitters, Quarry	
47-5061.00	Roof Bolters, Mining	
47-5071.00	Roustabouts, Oil and Gas	
47-5081.00	Helpers--Extraction Workers	
47-5099.99	Extraction Workers, All Other	
49-1011.00	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	
49-2011.00	Computer, Automated Teller, and Office Machine Repairers	
49-2021.00	Radio Mechanics	

49-2022.00	Telecommunications Equipment Installers and Repairers, Except Line Installers	
49-2091.00	Avionics Technicians	
49-2092.00	Electric Motor, Power Tool, and Related Repairers	
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	
49-2096.00	Electronic Equipment Installers and Repairers, Motor Vehicles	
49-2097.00	Electronic Home Entertainment Equipment Installers and Repairers	
49-2098.00	Security and Fire Alarm Systems Installers	x
49-3011.00	Aircraft Mechanics and Service Technicians	
49-3021.00	Automotive Body and Related Repairers	
49-3022.00	Automotive Glass Installers and Repairers	
49-3023.00	Automotive Service Technicians and Mechanics	
49-3023.01	Automotive Master Mechanics	
49-3023.02	Automotive Specialty Technicians	
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	
49-3041.00	Farm Equipment Mechanics	
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	
49-3043.00	Rail Car Repairers	
49-3051.00	Motorboat Mechanics	
49-3052.00	Motorcycle Mechanics	
49-3053.00	Outdoor Power Equipment and Other Small Engine Mechanics	
49-3091.00	Bicycle Repairers	
49-3092.00	Recreational Vehicle Service Technicians	
49-3093.00	Tire Repairers and Changers	
49-9011.00	Mechanical Door Repairers	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	
49-9021.00	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	
49-9021.01	Heating and Air Conditioning Mechanics and Installers	
49-9021.02	Refrigeration Mechanics and Installers	
49-9031.00	Home Appliance Repairers	
49-9041.00	Industrial Machinery Mechanics	
49-9042.00	Maintenance and Repair Workers, General	
49-9043.00	Maintenance Workers, Machinery	
49-9044.00	Millwrights	
49-9045.00	Refractory Materials Repairers, Except Brickmasons	
49-9051.00	Electrical Power-Line Installers and Repairers	
49-9052.00	Telecommunications Line Installers and Repairers	
49-9061.00	Camera and Photographic Equipment Repairers	
49-9062.00	Medical Equipment Repairers	
49-9063.00	Musical Instrument Repairers and Tuners	

49-9064.00	Watch Repairers	
49-9069.99	Precision Instrument and Equipment Repairers, All Other	
49-9091.00	Coin, Vending, and Amusement Machine Servicers and Repairers	
49-9092.00	Commercial Divers	
49-9093.00	Fabric Menders, Except Garment	
49-9094.00	Locksmiths and Safe Repairers	
49-9095.00	Manufactured Building and Mobile Home Installers	
49-9096.00	Riggers	
49-9097.00	Signal and Track Switch Repairers	
49-9098.00	Helpers--Installation, Maintenance, and Repair Workers	
49-9099.99	Installation, Maintenance, and Repair Workers, All Other	
51-1011.00	First-Line Supervisors/Managers of Production and Operating Workers	
51-2011.00	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	
51-2021.00	Coil Winders, Tapers, and Finishers	
51-2022.00	Electrical and Electronic Equipment Assemblers	
51-2023.00	Electromechanical Equipment Assemblers	
51-2031.00	Engine and Other Machine Assemblers	
51-2041.00	Structural Metal Fabricators and Fitters	
51-2091.00	Fiberglass Laminators and Fabricators	x
51-2092.00	Team Assemblers	
51-2093.00	Timing Device Assemblers, Adjusters, and Calibrators	
51-2099.99	Assemblers and Fabricators, All Other	
51-3011.00	Bakers	
51-3021.00	Butchers and Meat Cutters	
51-3022.00	Meat, Poultry, and Fish Cutters and Trimmers	
51-3023.00	Slaughterers and Meat Packers	
51-3091.00	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	
51-3092.00	Food Batchmakers	
51-3093.00	Food Cooking Machine Operators and Tenders	
51-4011.00	Computer-Controlled Machine Tool Operators, Metal and Plastic	
51-4012.00	Numerical Tool and Process Control Programmers	
51-4021.00	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4022.00	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4023.00	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4031.00	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4032.00	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	
51-4033.00	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	

51-4034.00 Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic

51-4035.00 Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic

51-4041.00 Machinists

51-4051.00 Metal-Refining Furnace Operators and Tenders

51-4052.00 Pourers and Casters, Metal

51-4061.00 Model Makers, Metal and Plastic

51-4062.00 Patternmakers, Metal and Plastic

51-4071.00 Foundry Mold and Coremakers

51-4072.00 Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic

51-4081.00 Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic

51-4111.00 Tool and Die Makers

51-4121.00 Welders, Cutters, Solderers, and Brazers

51-4121.06 Welders, Cutters, and Welder Fitters

51-4121.07 Solderers and Brazers

51-4122.00 Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders

51-4191.00 Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic

51-4192.00 Lay-Out Workers, Metal and Plastic

51-4193.00 Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic

51-4194.00 Tool Grinders, Filers, and Sharpeners

51-4199.99 Metal Workers and Plastic Workers, All Other

51-5011.00 Bindery Workers

51-5012.00 Bookbinders

51-5021.00 Job Printers

51-5022.00 Prepress Technicians and Workers

51-5023.00 Printing Machine Operators

51-6011.00 Laundry and Dry-Cleaning Workers

51-6021.00 Pressers, Textile, Garment, and Related Materials

51-6031.00 Sewing Machine Operators

51-6041.00 Shoe and Leather Workers and Repairers

51-6042.00 Shoe Machine Operators and Tenders

51-6051.00 Sewers, Hand

51-6052.00 Tailors, Dressmakers, and Custom Sewers

51-6061.00 Textile Bleaching and Dyeing Machine Operators and Tenders

51-6062.00 Textile Cutting Machine Setters, Operators, and Tenders

51-6063.00 Textile Knitting and Weaving Machine Setters, Operators, and Tenders

51-6064.00 Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders

51-6091.00 Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers

51-6092.00 Fabric and Apparel Patternmakers

51-6093.00 Upholsterers

51-6099.99 Textile, Apparel, and Furnishings Workers, All Other

51-7011.00 Cabinetmakers and Bench Carpenters

51-7021.00 Furniture Finishers

51-7031.00	Model Makers, Wood
51-7032.00	Patternmakers, Wood
51-7041.00	Sawing Machine Setters, Operators, and Tenders, Wood
51-7042.00	Woodworking Machine Setters, Operators, and Tenders, Except Sawing
51-7099.99	Woodworkers, All Other
51-8011.00	Nuclear Power Reactor Operators
51-8012.00	Power Distributors and Dispatchers
51-8013.00	Power Plant Operators
51-8021.00	Stationary Engineers and Boiler Operators
51-8031.00	Water and Liquid Waste Treatment Plant and System Operators
51-8091.00	Chemical Plant and System Operators
51-8092.00	Gas Plant Operators
51-8093.00	Petroleum Pump System Operators, Refinery Operators, and Gaugers
51-8099.99	Plant and System Operators, All Other
51-9011.00	Chemical Equipment Operators and Tenders
51-9012.00	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders
51-9021.00	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders
51-9022.00	Grinding and Polishing Workers, Hand
51-9023.00	Mixing and Blending Machine Setters, Operators, and Tenders
51-9031.00	Cutters and Trimmers, Hand
51-9032.00	Cutting and Slicing Machine Setters, Operators, and Tenders
51-9041.00	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders
51-9051.00	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders
51-9061.00	Inspectors, Testers, Sorters, Samplers, and Weighers
51-9071.00	Jewelers and Precious Stone and Metal Workers
51-9071.01	Jewelers
51-9071.06	Gem and Diamond Workers
51-9071.07	Precious Metal Workers
51-9081.00	Dental Laboratory Technicians
51-9082.00	Medical Appliance Technicians
51-9083.00	Ophthalmic Laboratory Technicians
51-9111.00	Packaging and Filling Machine Operators and Tenders
51-9121.00	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders
51-9122.00	Painters, Transportation Equipment
51-9123.00	Painting, Coating, and Decorating Workers
51-9131.00	Photographic Process Workers
51-9132.00	Photographic Processing Machine Operators
51-9141.00	Semiconductor Processors
51-9191.00	Cementing and Gluing Machine Operators and Tenders

51-9192.00	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	
51-9193.00	Cooling and Freezing Equipment Operators and Tenders	
51-9194.00	Etchers and Engravers	
51-9195.00	Molders, Shapers, and Casters, Except Metal and Plastic	
51-9195.03	Stone Cutters and Carvers, Manufacturing	
51-9195.04	Glass Blowers, Molders, Benders, and Finishers	
51-9195.05	Potters, Manufacturing	
51-9195.07	Molding and Casting Workers	
51-9196.00	Paper Goods Machine Setters, Operators, and Tenders	
51-9197.00	Tire Builders	
51-9198.00	Helpers--Production Workers	
51-9199.99	Production Workers, All Other	
53-1011.00	Aircraft Cargo Handling Supervisors	x
53-1021.00	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	
53-1031.00	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators	
53-2011.00	Airline Pilots, Copilots, and Flight Engineers	
53-2012.00	Commercial Pilots	
53-2021.00	Air Traffic Controllers	
53-2022.00	Airfield Operations Specialists	
53-3011.00	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	
53-3021.00	Bus Drivers, Transit and Intercity	
53-3022.00	Bus Drivers, School	
53-3031.00	Driver/Sales Workers	
53-3032.00	Truck Drivers, Heavy and Tractor-Trailer	
53-3033.00	Truck Drivers, Light or Delivery Services	
53-3041.00	Taxi Drivers and Chauffeurs	
53-3099.99	Motor Vehicle Operators, All Other	
53-4011.00	Locomotive Engineers	
53-4012.00	Locomotive Firers	
53-4013.00	Rail Yard Engineers, Dinkey Operators, and Hostlers	
53-4021.00	Railroad Brake, Signal, and Switch Operators	
53-4031.00	Railroad Conductors and Yardmasters	
53-4041.00	Subway and Streetcar Operators	
53-4099.99	Rail Transportation Workers, All Other	
53-5011.00	Sailors and Marine Oilers	
53-5021.00	Captains, Mates, and Pilots of Water Vessels	
53-5021.01	Ship and Boat Captains	
53-5021.02	Mates- Ship, Boat, and Barge	
53-5021.03	Pilots, Ship	
53-5022.00	Motorboat Operators	
53-5031.00	Ship Engineers	
53-6011.00	Bridge and Lock Tenders	
53-6021.00	Parking Lot Attendants	
53-6031.00	Service Station Attendants	
53-6041.00	Traffic Technicians	

53-6051.00 Transportation Inspectors
 53-6051.01 Aviation Inspectors
 53-6051.07 Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation
 53-6051.08 Freight and Cargo Inspectors
 53-6099.99 Transportation Workers, All Other
 53-7011.00 Conveyor Operators and Tenders
 53-7021.00 Crane and Tower Operators
 53-7031.00 Dredge Operators
 53-7032.00 Excavating and Loading Machine and Dragline Operators
 53-7033.00 Loading Machine Operators, Underground Mining
 53-7041.00 Hoist and Winch Operators
 53-7051.00 Industrial Truck and Tractor Operators
 53-7061.00 Cleaners of Vehicles and Equipment
 53-7062.00 Laborers and Freight, Stock, and Material Movers, Hand
 53-7063.00 Machine Feeders and Offbearers
 53-7064.00 Packers and Packagers, Hand
 53-7071.00 Gas Compressor and Gas Pumping Station Operators
 53-7072.00 Pump Operators, Except Wellhead Pumpers
 53-7073.00 Wellhead Pumpers
 53-7081.00 Refuse and Recyclable Material Collectors
 53-7111.00 Shuttle Car Operators
 53-7121.00 Tank Car, Truck, and Ship Loaders
 53-7199.99 Material Moving Workers, All Other
 55-1011.00 Air Crew Officers
 55-1012.00 Aircraft Launch and Recovery Officers
 55-1013.00 Armored Assault Vehicle Officers
 55-1014.00 Artillery and Missile Officers
 55-1015.00 Command and Control Center Officers
 55-1016.00 Infantry Officers
 55-1017.00 Special Forces Officers
 55-1019.99 Military Officer Special and Tactical Operations Leaders/Managers, All Other
 55-2011.00 First-Line Supervisors/Managers of Air Crew Members
 55-2012.00 First-Line Supervisors/Managers of Weapons Specialists/Crew Members
 55-2013.00 First-Line Supervisors/Managers of All Other Tactical Operations Specialists
 55-3011.00 Air Crew Members
 55-3012.00 Aircraft Launch and Recovery Specialists
 55-3013.00 Armored Assault Vehicle Crew Members
 55-3014.00 Artillery and Missile Crew Members
 55-3015.00 Command and Control Center Specialists
 55-3016.00 Infantry
 55-3017.00 Radar and Sonar Technicians
 55-3018.00 Special Forces
 55-3019.99 Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members, All Other

Attachment 2

List of Database Descriptive Elements

Element ID	Element Name	Description	Not available
1	Worker Characteristics	Worker Characteristics	
1.A	Abilities	Enduring attributes of the individual that influence performance	
1.A.1	Cognitive Abilities	Abilities that influence the acquisition and application of knowledge in problem solving	
1.A.1.a	Verbal Abilities	Abilities that influence the acquisition and application of verbal information in problem solving	
1.A.1.a.1	Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	
1.A.1.a.2	Written Comprehension	The ability to read and understand information and ideas presented in writing.	
1.A.1.a.3	Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	
1.A.1.a.4	Written Expression	The ability to communicate information and ideas in writing so others will understand.	
1.A.1.b	Idea Generation and Reasoning Abilities	Abilities that influence the application and manipulation of information in problem solving	
1.A.1.b.1	Fluency of Ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	
1.A.1.b.2	Originality	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.	
1.A.1.b.3	Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	
1.A.1.b.4	Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	
1.A.1.b.5	Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	
1.A.1.b.6	Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	
1.A.1.b.7	Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	
1.A.1.c	Quantitative Abilities	Abilities that influence the solution of problems involving mathematical relationships	
1.A.1.c.1	Mathematical Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	
1.A.1.c.2	Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	
1.A.1.d	Memory	Abilities related to the recall of available information	
1.A.1.d.1	Memorization	The ability to remember information such as words, numbers, pictures, and procedures.	
1.A.1.e	Perceptual Abilities	Abilities related to the acquisition and organization of visual information	
1.A.1.e.1	Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	

1.A.1.e.2	Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.
1.A.1.e.3	Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes compa
1.A.1.f	Spatial Abilities	Abilities related to the manipulation and organization of spatial information
1.A.1.f.1	Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.
1.A.1.f.2	Visualization	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.
1.A.1.g	Attentiveness	Abilities related to application of attention
1.A.1.g.1	Selective Attention	The ability to concentrate on a task over a period of time without being distracted.
1.A.1.g.2	Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).
1.A.2	Psychomotor Abilities	Abilities that influence the capacity to manipulate and control objects
1.A.2.a	Fine Manipulative Abilities	Abilities related to the manipulation of objects
1.A.2.a.1	Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.
1.A.2.a.2	Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
1.A.2.a.3	Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
1.A.2.b	Control Movement Abilities	Abilities related to the control and manipulation of objects in time and space
1.A.2.b.1	Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
1.A.2.b.2	Multilimb Coordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.
1.A.2.b.3	Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.
1.A.2.b.4	Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.
1.A.2.c	Reaction Time and Speed Abilities	Abilities related to speed of manipulation of objects
1.A.2.c.1	Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.
1.A.2.c.2	Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.
1.A.2.c.3	Speed of Limb Movement	The ability to quickly move the arms and legs.
1.A.3	Physical Abilities	Abilities that influence strength, endurance, flexibility, balance and coordination
1.A.3.a	Physical Strength Abilities	Abilities related to the capacity to exert force

1.A.3.a.1	Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.
1.A.3.a.2	Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.
1.A.3.a.3	Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.
1.A.3.a.4	Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.
1.A.3.b	Endurance	The ability to exert oneself physically over long periods without getting out of breath
1.A.3.b.1	Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.
1.A.3.c	Flexibility, Balance, and Coordination	Abilities related to the control of gross body movements
1.A.3.c.1	Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.
1.A.3.c.2	Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.
1.A.3.c.3	Gross Body Coordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.
1.A.3.c.4	Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.
1.A.4	Sensory Abilities	Abilities that influence visual, auditory and speech perception
1.A.4.a	Visual Abilities	Abilities related to visual sensory input
1.A.4.a.1	Near Vision	The ability to see details at close range (within a few feet of the observer).
1.A.4.a.2	Far Vision	The ability to see details at a distance.
1.A.4.a.3	Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.
1.A.4.a.4	Night Vision	The ability to see under low light conditions.
1.A.4.a.5	Peripheral Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.
1.A.4.a.6	Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.
1.A.4.a.7	Glare Sensitivity	The ability to see objects in the presence of glare or bright lighting.
1.A.4.b	Auditory and Speech Abilities	Abilities related to auditory and oral input
1.A.4.b.1	Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.
1.A.4.b.2	Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.
1.A.4.b.3	Sound Localization	The ability to tell the direction from which a sound originated.
1.A.4.b.4	Speech Recognition	The ability to identify and understand the speech of another person.
1.A.4.b.5	Speech Clarity	The ability to speak clearly so others can understand you.
1.B	Interests	Preferences for work environments and outcomes
1.B.1	Occupational Interests	Occupational Interest Profiles (OIPs) are compatible with Holland's (1985, 1997) model of personality types and work environments. Six interest categories are used to describe the work environment of occupations: Realistic, Investigative, Artistic, Social

1.B.1.a	Realistic	Realistic occupations frequently involve work activities that include practical, hands-on problems and solutions. They often deal with plants, animals, and real-world materials like wood, tools, and machinery. Many of the occupations require working outside.
1.B.1.b	Investigative	Investigative occupations frequently involve working with ideas, and require an extensive amount of thinking. These occupations can involve searching for facts and figuring out problems mentally.
1.B.1.c	Artistic	Artistic occupations frequently involve working with forms, designs and patterns. They often require self-expression and the work can be done without following a clear set of rules.
1.B.1.d	Social	Social occupations frequently involve working with, communicating with, and teaching people. These occupations often involve helping or providing service to others.
1.B.1.e	Enterprising	Enterprising occupations frequently involve starting up and carrying out projects. These occupations can involve leading people and making many decisions. Sometimes they require risk taking and often deal with business.
1.B.1.f	Conventional	Conventional occupations frequently involve following set procedures and routines. These occupations can include working with data and details more than with ideas. Usually there is a clear line of authority to follow.
1.B.1.g	First Interest High-Point	Primary-Rank Descriptiveness
1.B.1.h	Second Interest High-Point	Secondary-Cutoff/Rank Descriptiveness
1.B.1.i	Third Interest High-Point	Tertiary-Cutoff/Rank Descriptiveness
1.B.2	Occupational Values	Occupational Reinforcer Patterns (ORPs) indicate which work values and needs are likely to be reinforced or satisfied by a particular O*NET-SOC occupation. The use of work values to describe occupations is based on the Theory of Work Adjustment (TWA) developed by Ginzberg and Seasholtz.
1.B.2.a	Achievement-Mean Extent	Occupations that satisfy this work value are results oriented and allow employees to use their strongest abilities, giving them a feeling of accomplishment. Corresponding needs are Ability Utilization and Achievement.
1.B.2.a.1	Ability Utilization	Workers on this job make use of their individual abilities.
1.B.2.a.2	Achievement	Workers on this job get a feeling of accomplishment.
1.B.2.b	Working Conditions-Mean Extent	Occupations that satisfy this work value offer job security and good working conditions. Corresponding needs are Activity, Compensation, Independence, Security, Variety and Working Conditions.
1.B.2.b.1	Activity	Workers on this job are busy all the time.
1.B.2.b.2	Independence	Workers on this job do their work alone.
1.B.2.b.3	Variety	Workers on this job have something different to do every day.
1.B.2.b.4	Compensation	Workers on this job are paid well in comparison with other workers.
1.B.2.b.5	Security	Workers on this job have steady employment.
1.B.2.b.6	Working Conditions	Workers on this job have good working conditions.
1.B.2.c	Recognition-Mean Extent	Occupations that satisfy this work value offer advancement, potential for leadership, and are often considered prestigious. Corresponding needs are Advancement, Authority, Recognition and Social Status.
1.B.2.c.1	Advancement	Workers on this job have opportunities for advancement.
1.B.2.c.2	Recognition	Workers on this job receive recognition for the work they do.

1.B.2.c.3	Authority	Workers on this job give directions and instructions to others.
1.B.2.c.4	Social Status	Workers on this job are looked up to by others in their company and their community.
1.B.2.d	Relationships-Mean Extent	Occupations that satisfy this work value allow employees to provide service to others and work with co-workers in a friendly non-competitive environment. Corresponding needs are Co-workers, Moral Values and Social Service.
1.B.2.d.1	Co-workers	Workers on this job have co-workers who are easy to get along with.
1.B.2.d.2	Social Service	Workers on this job have work where they do things for other people.
1.B.2.d.3	Moral Values	Workers on this job are never pressured to do things that go against their sense of right and wrong.
1.B.2.e	Support-Mean Extent	Occupations that satisfy this work value offer supportive management that stands behind employees. Corresponding needs are Company Policies, Supervision: Human Relations and Supervision: Technical.
1.B.2.e.1	Company Policies and Practices	Workers on this job are treated fairly by the company.
1.B.2.e.2	Supervision, Human Relations	Workers on this job have supervisors who back up their workers with management.
1.B.2.e.3	Supervision, Technical	Workers on this job have supervisors who train their workers well.
1.B.2.f	Independence-Mean Extent	Occupations that satisfy this work value allow employs to work on their own and make decisions. Corresponding needs are Creativity, Responsibility and Autonomy.
1.B.2.f.1	Creativity	Workers on this job try out their own ideas.
1.B.2.f.2	Responsibility	Workers on this job make decisions on their own.
1.B.2.f.3	Autonomy	Workers on this job plan their work with little supervision.
1.C	Work Styles	Work Styles
1.C.1	Achievement Orientation	Job requires personal goal setting, trying to succeed at those goals, and striving to be competent in own work
1.C.1.a	Achievement/Effort	Job requires establishing and maintaining personally challenging achievement goals and exerting effort toward mastering tasks.
1.C.1.b	Persistence	Job requires persistence in the face of obstacles.
1.C.1.c	Initiative	Job requires a willingness to take on responsibilities and challenges.
1.C.2	Social Influence	Job requires having an impact on others in the organization, and displaying energy and leadership
1.C.2.b	Leadership	Job requires a willingness to lead, take charge, and offer opinions and direction.
1.C.3	Interpersonal Orientation	Job requires being pleasant, cooperative, sensitive to others, easy to get along with, and having a preference for associating with other organization members
1.C.3.a	Cooperation	Job requires being pleasant with others on the job and displaying a good-natured, cooperative attitude.
1.C.3.b	Concern for Others	Job requires being sensitive to others' needs and feelings and being understanding and helpful on the job.
1.C.3.c	Social Orientation	Job requires preferring to work with others rather than alone, and being personally connected with others on the job.
1.C.4	Adjustment	Job requires maturity, poise, flexibility, and restraint to cope with pressure, stress, criticism, setbacks, personal and work-related problems, etc.
1.C.4.a	Self Control	Job requires maintaining composure, keeping emotions in check, controlling anger, and avoiding aggressive behavior, even in very difficult situations.
1.C.4.b	Stress Tolerance	Job requires accepting criticism and dealing calmly and effectively with high stress situations.

1.C.4.c	Adaptability/Flexibility	Job requires being open to change (positive or negative) and to considerable variety in the workplace.
1.C.5	Conscientiousness	Job requires dependability, commitment to doing the job correctly and carefully, and being trustworthy, accountable, and attentive to details
1.C.5.a	Dependability	Job requires being reliable, responsible, and dependable, and fulfilling obligations.
1.C.5.b	Attention to Detail	Job requires being careful about detail and thorough in completing work tasks.
1.C.5.c	Integrity	Job requires being honest and ethical.
1.C.6	Independence	Job requires developing one's own ways of doing things, guiding oneself with little or no supervision, and depending on oneself to get things done.
1.C.7	Practical Intelligence	Job requires generating useful ideas and thinking things through logically
1.C.7.a	Innovation	Job requires creativity and alternative thinking to develop new ideas for and answers to work-related problems.
1.C.7.b	Analytical Thinking	Job requires analyzing information and using logic to address work-related issues and problems.
2	Worker Requirements	Worker Requirements
2.A	Basic Skills	Developed capacities that facilitate learning or the more rapid acquisition of knowledge
2.A.1	Content	Background structures needed to work with and acquire more specific skills in a variety of different domains
2.A.1.a	Reading Comprehension	Understanding written sentences and paragraphs in work related documents.
2.A.1.b	Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
2.A.1.c	Writing	Communicating effectively in writing as appropriate for the needs of the audience.
2.A.1.d	Speaking	Talking to others to convey information effectively.
2.A.1.e	Mathematics	Using mathematics to solve problems.
2.A.1.f	Science	Using scientific rules and methods to solve problems.
2.A.2	Process	Procedures that contribute to the more rapid acquisition of knowledge and skill across a variety of domains
2.A.2.a	Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
2.A.2.b	Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
2.A.2.c	Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
2.A.2.d	Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
2.B	Cross-Functional Skills	Developed capacities that facilitate performance of activities that occur across jobs
2.B.1	Social Skills	Developed capacities used to work with people to achieve goals
2.B.1.a	Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.
2.B.1.b	Coordination	Adjusting actions in relation to others' actions.
2.B.1.c	Persuasion	Persuading others to change their minds or behavior.
2.B.1.d	Negotiation	Bringing others together and trying to reconcile differences.

2.B.1.e	Instructing	Teaching others how to do something.
2.B.1.f	Service Orientation	Actively looking for ways to help people.
2.B.2	Complex Problem Solving Skills	Developed capacities used to solve novel, ill-defined problems in complex, real-world settings
2.B.2.i	Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
2.B.3	Technical Skills	Developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems
2.B.3.a	Operations Analysis	Analyzing needs and product requirements to create a design.
2.B.3.b	Technology Design	Generating or adapting equipment and technology to serve user needs.
2.B.3.c	Equipment Selection	Determining the kind of tools and equipment needed to do a job.
2.B.3.d	Installation	Installing equipment, machines, wiring, or programs to meet specifications.
2.B.3.e	Programming	Writing computer programs for various purposes.
2.B.3.g	Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.
2.B.3.h	Operation and Control	Controlling operations of equipment or systems.
2.B.3.j	Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
2.B.3.k	Troubleshooting	Determining causes of operating errors and deciding what to do about it.
2.B.3.l	Repairing	Repairing machines or systems using the needed tools.
2.B.3.m	Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
2.B.4	Systems Skills	Developed capacities used to understand, monitor, and improve socio-technical systems
2.B.4.e	Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.
2.B.4.g	Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.
2.B.4.h	Systems Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.
2.B.5	Resource Management Skills	Developed capacities used to allocate resources efficiently
2.B.5.a	Time Management	Managing one's own time and the time of others.
2.B.5.b	Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.
2.B.5.c	Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
2.B.5.d	Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.
2.C	Knowledge	Organized sets of principles and facts applying in general domains
2.C.1	Business and Management	Knowledge of principles and facts related to business administration and accounting, human and material resource management in organizations, sales and marketing, economics, and office information and organizing systems
2.C.1.a	Administration and Management	Knowledge of business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, production methods, and coordination of people and resources.
2.C.1.b	Clerical	Knowledge of administrative and clerical procedures and systems such as word processing, managing files and records, stenography and transcription, designing forms, and other office procedures and terminology.

2.C.1.c	Economics and Accounting	Knowledge of economic and accounting principles and practices, the financial markets, banking and the analysis and reporting of financial data.
2.C.1.d	Sales and Marketing	Knowledge of principles and methods for showing, promoting, and selling products or services. This includes marketing strategy and tactics, product demonstration, sales techniques, and sales control systems.
2.C.1.e	Customer and Personal Service	Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.
2.C.1.f	Personnel and Human Resources	Knowledge of principles and procedures for personnel recruitment, selection, training, compensation and benefits, labor relations and negotiation, and personnel information systems.
2.C.10	Transportation	Knowledge of principles and methods for moving people or goods by air, rail, sea, or road, including the relative costs and benefits.
2.C.2	Manufacturing and Production	Knowledge of principles and facts related to the production, processing, storage, and distribution of manufactured and agricultural goods
2.C.2.a	Production and Processing	Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.
2.C.2.b	Food Production	Knowledge of techniques and equipment for planting, growing, and harvesting food products (both plant and animal) for consumption, including storage/handling techniques.
2.C.3	Engineering and Technology	Knowledge of the design, development, and application of technology for specific purposes.
2.C.3.a	Computers and Electronics	Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.
2.C.3.b	Engineering and Technology	Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
2.C.3.c	Design	Knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.
2.C.3.d	Building and Construction	Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.
2.C.3.e	Mechanical	Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
2.C.4	Mathematics and Science	Knowledge of the history, theories, methods, and applications of the physical, biological, social, mathematical, and geography
2.C.4.a	Mathematics	Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.
2.C.4.b	Physics	Knowledge and prediction of physical principles, laws, their interrelationships, and applications to understanding fluid, material, and atmospheric dynamics, and mechanical, electrical, atomic and sub-atomic structures and processes.
2.C.4.c	Chemistry	Knowledge of the chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal m

2.C.4.d	Biology	Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
2.C.4.e	Psychology	Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; psychological research methods; and the assessment and treatment of behavioral and affective disorders.
2.C.4.f	Sociology and Anthropology	Knowledge of group behavior and dynamics, societal trends and influences, human migrations, ethnicity, cultures and their history and origins.
2.C.4.g	Geography	Knowledge of principles and methods for describing the features of land, sea, and air masses, including their physical characteristics, locations, interrelationships, and distribution of plant, animal, and human life.
2.C.5	Health Services	Knowledge of principles and facts regarding diagnosing, curing, and preventing disease, and improving and preserving physical and mental health and well-being
2.C.5.a	Medicine and Dentistry	Knowledge of the information and techniques needed to diagnose and treat human injuries, diseases, and deformities. This includes symptoms, treatment alternatives, drug properties and interactions, and preventive health-care measures.
2.C.5.b	Therapy and Counseling	Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.
2.C.6	Education and Training	Knowledge of principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.
2.C.7	Arts and Humanities	Knowledge of facts and principles related to the branches of learning concerned with human thought, language, and the arts.
2.C.7.a	English Language	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
2.C.7.b	Foreign Language	Knowledge of the structure and content of a foreign (non-English) language including the meaning and spelling of words, rules of composition and grammar, and pronunciation.
2.C.7.c	Fine Arts	Knowledge of the theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.
2.C.7.d	History and Archeology	Knowledge of historical events and their causes, indicators, and effects on civilizations and cultures.
2.C.7.e	Philosophy and Theology	Knowledge of different philosophical systems and religions. This includes their basic principles, values, ethics, ways of thinking, customs, practices, and their impact on human culture.
2.C.8	Law and Public Safety	Knowledge of regulations and methods for maintaining people and property free from danger, injury, or damage; the rules of public conduct established and enforced by legislation, and the political process establishing such rules.
2.C.8.a	Public Safety and Security	Knowledge of relevant equipment, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions.
2.C.8.b	Law and Government	Knowledge of laws, legal codes, court procedures, precedents, government regulations, executive orders, agency rules, and the democratic political process.
2.C.9	Communications	Knowledge of the science and art of delivering information

2.C.9.a	Telecommunications	Knowledge of transmission, broadcasting, switching, control, and operation of telecommunications systems.
2.C.9.b	Communications and Media	Knowledge of media production, communication, and dissemination techniques and methods. This includes alternative ways to inform and entertain via written, oral, and visual media.
2.D	Education	Prior educational experience required to perform in a job
2.D.1	Required Level of Education	The level of education required to perform a job.
2.D.2	Instructional Program Required	The instructional program required for this job
2.D.3	Education Level in Specific Subjects	The amount of education required in 15 subject areas to perform in a job. Subject areas cover most of the courses that occur in high school, junior college, college undergraduate degree programs, and other education and training programs
2.D.3.a	Technical Vocational	Courses focus on non-business technical skills, such as Agriculture, Industrial Arts, Automobile and Shop, and Electronics
2.D.3.b	Business Vocational	Courses focus on basic business skills, such as Word Processing, Filing, Bookkeeping/Basic Accounting
2.D.3.c	English/language Arts	Courses focus on reading, interpretation, and writing, such as Literature, Composition, Journalism, and Creative Writing
2.D.3.d	Oral Communication	Courses focus on oral communication and speech, such as Oral Communication, Speech, and Interpersonal Communication
2.D.3.e	Languages	Courses focus on reading, writing, and/or speaking languages other than English, such as French, Chinese, German, Japanese, Latin, Russian, and Spanish
2.D.3.f	Basic Math	Courses focus on basic and applied math, such as General Math and Business Math
2.D.3.g	Advanced Math	Courses focus on advanced topics in math, such as Algebra, Geometry, Calculus, and Statistics
2.D.3.h	Physical Science	Courses focus on the study of matter and/or energy, such as Physics, Chemistry, and Astronomy
2.D.3.i	Computer Science	Courses focus on computers and their uses, such as Programming, Information Systems Management, and Software Applications
2.D.3.j	Biological Science	Courses focus on the study of life and living beings, such as life science, biology, anatomy and physiology
2.D.3.k	Applied Science	Courses focus on the application of science, such as Engineering, Health, and Medicine
2.D.3.l	Social Science	Courses focus on the behavioral sciences, such as Social Studies, Economics, History, Psychology, and Sociology
2.D.3.m	Arts	Courses focus on visual and performing arts, such as Arts and Crafts, Music, Painting, Sculpture, Theater, and Voice
2.D.3.n	Humanities	Courses focus on cultural and philosophical aspects of humans, such as Minority Studies, Philosophy, and Religion
2.D.3.o	Physical Education	Courses focus on physical fitness and sports, such as Aerobics, Jogging, Weight Lifting, and Specific Sports
3	Experience Requirements	Experience Requirements
3.A	Experience and Training	If someone were being hired to perform this job, how much of the following would be required?
3.A.1	Related Work Experience	Amount of related work experience required to get hired for the job?
3.A.2	On-Site or In-Plant Training	Amount of on-site or in-plant training (e.g., organized class room instruction) required to perform the job?
3.A.3	On-the-Job Training	Amount of on the job training required to perform the job?

3.A.4	Apprenticeship	Length of apprenticeship required to perform the job?	
3.B	Basic Skills - Entry Requirement	Entry requirement for developed capacities that facilitate learning or the more rapid acquisition of knowledge	na
3.B.1	Content - Entry Requirement	Entry requirement for background structures needed to work with and acquire more specific skills in a variety of different domains	na
3.B.1.a	Reading Comprehension - Entry Requirement	Entry requirement for understanding written sentences and paragraphs in work related documents	na
3.B.1.b	Active Listening - Entry Requirement	Entry requirement for listening to what other people are saying and asking questions as appropriate	na
3.B.1.c	Writing - Entry Requirement	Entry requirement for communicating effectively with others in writing as indicated by the needs of the audience	na
3.B.1.d	Speaking - Entry Requirement	Entry requirement for talking to others to effectively convey information	na
3.B.1.e	Mathematics - Entry Requirement	Entry requirement for using mathematics to solve problems	na
3.B.1.f	Science - Entry Requirement	Entry requirement for using scientific methods to solve problems	na
3.B.2	Process - Entry Requirement	Entry requirement for procedures that contribute to the more rapid acquisition of knowledge and skill across a variety of domains	na
3.B.2.a	Critical Thinking - Entry Requirement	Entry requirement for using logic and analysis to identify the strengths and weaknesses in different approaches	na
3.B.2.b	Active Learning - Entry Requirement	Entry requirement for working with new material or information to grasp its implications	na
3.B.2.c	Learning Strategies - Entry Requirement	Entry requirement for using multiple approaches when learning or teaching new things	na
3.B.2.d	Monitoring - Entry Requirement	Entry requirement for assessing how well one is doing when learning or doing something	na
3.C	Cross-Functional Skills - Entry Requirement	Entry requirement for developed capacities that facilitate performance of activities that occur across jobs	na
3.C.1	Social Skills - Entry Requirement	Entry requirement for developed capacities used to work with people to achieve goals	na
3.C.1.a	Social Perceptiveness - Entry Requirement	Entry requirement for being aware of others' reactions and understanding why they react the way they do	na
3.C.1.b	Coordination - Entry Requirement	Entry requirement for adjusting actions in relation to others' actions	na
3.C.1.c	Persuasion - Entry Requirement	Entry requirement for persuading others to approach things differently	na
3.C.1.d	Negotiation - Entry Requirement	Entry requirement for bring others together and trying to reconcile differences	na
3.C.1.e	Instructing - Entry Requirement	Entry requirement for teaching others how to do something	na
3.C.1.f	Service Orientation - Entry Requirement	Entry requirement for actively looking for ways to help people	na
3.C.2	Complex Problem Solving Skills - Entry Requirement	Entry requirement for developed capacities used to solve novel, ill-defined problems in complex, real-world settings	na
3.C.2.a	Problem Identification - Entry Requirement	Entry requirement for identifying the nature of problems	na
3.C.2.b	Information Gathering - Entry Requirement	Entry requirement for knowing how to find information and identifying essential information	na
3.C.2.c	Information Organization - Entry Requirement	Entry requirement for finding ways to structure or classify multiple pieces of information	na

3.C.2.d	Synthesis/Reorganization - Entry Requirement	Entry requirement for reorganizing information to get a better approach to problems or tasks	na
3.C.2.e	Idea Generation - Entry Requirement	Entry requirement for generating a number of different approaches to problems	na
3.C.2.f	Idea Evaluation - Entry Requirement	Entry requirement for evaluating the likely success of an idea in relation to the demands of the situation	na
3.C.2.g	Implementation Planning - Entry Requirement	Entry requirement for developing approaches for implementing an idea	na
3.C.2.h	Solution Appraisal - Entry Requirement	Entry requirement for observing and evaluating the outcomes of a problem solution to identify lessons learned or redirect efforts	na
3.C.3	Technical Skills - Entry Requirement	Entry requirement for developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems	na
3.C.3.a	Operations Analysis - Entry Requirement	Entry requirement for analyzing needs and product requirements to create a design	na
3.C.3.b	Technology Design - Entry Requirement	Entry requirement for generating or adapting equipment and technology to serve user needs	na
3.C.3.c	Equipment Selection - Entry Requirement	Entry requirement for determining the kind of tools and equipment needed to do a job	na
3.C.3.d	Installation - Entry Requirement	Entry requirement for installing equipment, machines, wiring, or programs to meet specifications	na
3.C.3.e	Programming - Entry Requirement	Entry requirement for writing computer programs for various purposes	na
3.C.3.f	Testing - Entry Requirement	Entry requirement for conducting tests to determine whether equipment, software, or procedures are operating as expected	na
3.C.3.g	Operation Monitoring - Entry Requirement	Entry requirement for watching gauges, dials, or other indicators to make sure a machine is working properly	na
3.C.3.h	Operation and Control - Entry Requirement	Entry requirement for controlling operations of equipment or systems	na
3.C.3.i	Product Inspection - Entry Requirement	Entry requirement for inspecting and evaluating the quality of products	na
3.C.3.j	Equipment Maintenance - Entry Requirement	Entry requirement for performing routine maintenance and determining when and what kind of maintenance is needed	na
3.C.3.k	Troubleshooting - Entry Requirement	Entry requirement for determining what is causing an operating error and deciding what to do about it	na
3.C.3.l	Repairing - Entry Requirement	Entry requirement for repairing machines or systems using the needed tools	na
3.C.4	Systems Skills - Entry Requirement	Entry requirement for developed capacities used to understand, monitor, and improve socio-technical systems	na
3.C.4.a	Visioning - Entry Requirement	Entry requirement for developing an image of how a system should work under ideal conditions	na
3.C.4.b	Systems Perception - Entry Requirement	Entry requirement for determining when important changes have occurred in a system or are likely to occur	na
3.C.4.c	Identifying Downstream Consequences - Entry Requirement	Entry requirement for determining the long-term outcomes of a change in operations	na
3.C.4.d	Identification of Key Causes - Entry Requirement	Entry requirement for identifying the things that must be changed to achieve a goal	na
3.C.4.e	Judgment and Decision Making - Entry Requirement	Entry requirement for weighing the relative costs and benefits of a potential action	na
3.C.4.f	System Evaluation - Entry Requirement	Entry requirement for looking at many indicators of system performance, taking into account their accuracy	na

3.C.5	Resource Management Skills - Entry Requirement	Entry requirement for developed capacities used to allocate resources efficiently	na
3.C.5.a	Time Management - Entry Requirement	Entry requirement for managing one's own time and the time of others	na
3.C.5.b	Management of Financial Resources - Entry Requirement	Entry requirement for determining how money will be spent to get the work done, and accounting for these expenditures	na
3.C.5.c	Management of Material Resources - Entry Requirement	Entry requirement for obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work	na
3.C.5.d	Management of Personnel Resources - Entry Requirement	Entry requirement for motivating, developing, and directing people as they work, identifying the best people for the job	na
3.D	Licensing	Licenses, certificates, or registrations that are awarded to show that a job holder has gained certain skills. This includes requirements for obtaining these credentials, and the organization or agency requiring their possession.	na
3.D.1	License, Certificate, or Registration Required	At least one license, certificate, or registration is required to perform in this job, including a driver's or vehicle operator's license. The specific license(s), certificate(s), or registration(s) are listed.	na
3.D.2	Specific License or Certificate Required	Specific education, training, examination, or other requirements for obtaining the licenses, certificates, or registration needed to perform in this job	na
3.D.2.a	Post-Secondary Degree	Obtaining the licenses, certificates, or registration needed to perform in this job requires a post-secondary degree, for example an Associate's or Bachelor's degree.	na
3.D.2.b	Graduate Degree	Obtaining the licenses, certificates, or registration needed to perform in this job requires a graduate degree, for example, a Master's or Doctoral degree.	na
3.D.2.c	On-the-Job Training	Obtaining the licenses, certificates, or registration needed to perform in this job requires on-the-job training, including apprenticeships, internships, and other supervised experiences.	na
3.D.2.d	Examination	Obtaining the licenses, certificates, or registration needed to perform in this job requires an examination, for example, written, oral, or performance assessments.	na
3.D.2.e	Character References	Obtaining the licenses, certificates, or registration needed to perform in this job requires one or more character references from other individuals.	na
3.D.4	Additional Education and Training	Retaining the licenses, certificates, or registration needed to perform in this job requires additional course work.	na
3.D.5	Organization and Agency Requirements	Organizations or agencies requiring the specific licenses, certificates, or registration needed to perform in a job	na
3.D.5.a	Legal Requirement	Federal, state, or local law requires possessing specific licenses, certificates, or registration for performance in this job.	na
3.D.5.b	Employer Requirement	Employers require possessing specific licenses, certificates, or registration for performance in this job.	na
3.D.5.c	Union, Guild, or Professional Association	A union or professional association requires possessing specific licenses, certificates, or registration for performance in this job.	na
4	Occupational Requirements	Occupational Requirements	
4.A	Generalized Work Activities	General types of job behaviors occurring on multiple jobs	

4.A.1	Information Input	Where and how are the information and data gained that are needed to perform this job?
4.A.1.a	Looking for and Receiving Job-Related Information	How is information obtained to perform this job?
4.A.1.a.1	Getting Information	Observing, receiving, and otherwise obtaining information from all relevant sources.
4.A.1.a.2	Monitor Processes, Materials, or Surroundings	Monitoring and reviewing information from materials, events, or the environment, to detect or assess problems.
4.A.1.b	Identify and Evaluating Job-Relevant Information	How is information interpreted to perform this job?
4.A.1.b.1	Identifying Objects, Actions, and Events	Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
4.A.1.b.2	Inspecting Equipment, Structures, or Material	Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
4.A.1.b.3	Estimating the Quantifiable Characteristics of Products, Events, or Information	Estimating sizes, distances, and quantities; or determining time, costs, resources, or materials needed to perform a work activity.
4.A.2	Mental Processes	What processing, planning, problem-solving, decision-making, and innovating activities are performed with job-relevant information?
4.A.2.a	Information and Data Processing	How is information processed to perform this job?
4.A.2.a.1	Judging the Qualities of Things, Services, or People	Assessing the value, importance, or quality of things or people.
4.A.2.a.2	Processing Information	Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.
4.A.2.a.3	Evaluating Information to Determine Compliance with Standards	Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.
4.A.2.a.4	Analyzing Data or Information	Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.
4.A.2.b	Reasoning and Decision Making	What decisions are made and problems solved in performing this job?
4.A.2.b.1	Making Decisions and Solving Problems	Analyzing information and evaluating results to choose the best solution and solve problems.
4.A.2.b.2	Thinking Creatively	Developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions.
4.A.2.b.3	Updating and Using Relevant Knowledge	Keeping up-to-date technically and applying new knowledge to your job.
4.A.2.b.4	Developing Objectives and Strategies	Establishing long-range objectives and specifying the strategies and actions to achieve them.
4.A.2.b.5	Scheduling Work and Activities	Scheduling events, programs, and activities, as well as the work of others.
4.A.2.b.6	Organizing, Planning, and Prioritizing Work	Developing specific goals and plans to prioritize, organize, and accomplish your work.
4.A.3	Work Output	What physical activities are performed, what equipment and vehicles are operated/controlled, and what complex/technical activities are accomplished as job outputs?

4.A.3.a	Performing Physical and Manual Work Activities	What activities using the body and hands are done to perform this job?
4.A.3.a.1	Performing General Physical Activities	Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials.
4.A.3.a.2	Handling and Moving Objects	Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.
4.A.3.a.3	Controlling Machines and Processes	Using either control mechanisms or direct physical activity to operate machines or processes (not including computers or vehicles).
4.A.3.a.4	Operating Vehicles, Mechanized Devices, or Equipment	Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft.
4.A.3.b	Performing Complex and Technical Activities	What skilled activities using coordinated movements are done to perform this job?
4.A.3.b.1	Interacting With Computers	Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
4.A.3.b.2	Drafting, Laying Out, and Specifying Technical Devices, Parts, and Equipment	Providing documentation, detailed instructions, drawings, or specifications to tell others about how devices, parts, equipment, or structures are to be fabricated, constructed, assembled, modified, maintained, or used.
4.A.3.b.4	Repairing and Maintaining Mechanical Equipment	Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.
4.A.3.b.5	Repairing and Maintaining Electronic Equipment	Servicing, repairing, calibrating, regulating, fine-tuning, or testing machines, devices, and equipment that operate primarily on the basis of electrical or electronic (not mechanical) principles.
4.A.3.b.6	Documenting/Recording Information	Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.
4.A.4	Interacting With Others	What interactions with other persons or supervisory activities occur while performing this job?
4.A.4.a	Communicating and Interacting	What interactions with other people occur while performing this job?
4.A.4.a.1	Interpreting the Meaning of Information for Others	Translating or explaining what information means and how it can be used.
4.A.4.a.2	Communicating with Supervisors, Peers, or Subordinates	Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
4.A.4.a.3	Communicating with Persons Outside Organization	Communicating with people outside the organization, representing the organization to customers, the public, government, and other external sources. This information can be exchanged in person, in writing, or by telephone or e-mail.
4.A.4.a.4	Establishing and Maintaining Interpersonal Relationships	Developing constructive and cooperative working relationships with others, and maintaining them over time.
4.A.4.a.5	Assisting and Caring for Others	Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patients.
4.A.4.a.6	Selling or Influencing Others	Convincing others to buy merchandise/goods or to otherwise change their minds or actions.
4.A.4.a.7	Resolving Conflicts and Negotiating with Others	Handling complaints, settling disputes, and resolving grievances and conflicts, or otherwise negotiating with others.

4.A.4.a.8	Performing for or Working Directly with the Public	Performing for people or dealing directly with the public. This includes serving customers in restaurants and stores, and receiving clients or guests.	
4.A.4.b	Coordinating, Developing, Managing, and Advising	What coordinating, managerial, or advisory activities are done while performing this job?	
4.A.4.b.1	Coordinating the Work and Activities of Others	Getting members of a group to work together to accomplish tasks.	
4.A.4.b.2	Developing and Building Teams	Encouraging and building mutual trust, respect, and cooperation among team members.	
4.A.4.b.3	Training and Teaching Others	Identifying the educational needs of others, developing formal educational or training programs or classes, and teaching or instructing others.	
4.A.4.b.4	Guiding, Directing, and Motivating Subordinates	Providing guidance and direction to subordinates, including setting performance standards and monitoring performance.	
4.A.4.b.5	Coaching and Developing Others	Identifying the developmental needs of others and coaching, mentoring, or otherwise helping others to improve their knowledge or skills.	
4.A.4.b.6	Provide Consultation and Advice to Others	Providing guidance and expert advice to management or other groups on technical, systems-, or process-related topics.	
4.A.4.c	Administering	What administrative, staffing, monitoring, or controlling activities are done while performing this job?	
4.A.4.c.1	Performing Administrative Activities	Performing day-to-day administrative tasks such as maintaining information files and processing paperwork.	
4.A.4.c.2	Staffing Organizational Units	Recruiting, interviewing, selecting, hiring, and promoting employees in an organization.	
4.A.4.c.3	Monitoring and Controlling Resources	Monitoring and controlling resources and overseeing the spending of money.	
4.B	Organizational Context	Characteristics of the organization that influence how people do their work	na
4.B.1	Structural Characteristics	A functional subsystem of organization structure subsuming constructs of (a) organizational structure, and (b) human resources systems and practices	na
4.B.1.a	Organizational Structure	The architecture or anatomy of an organization, affecting the behavior of organizational members as well as the ability of organizations to adapt effectively to their environments. Elements of organizational structure include the hierarchy of the organiza	na
4.B.1.a.1	Decision Making System	The amount of autonomy and involvement in decision making that employees have	na
4.B.1.a.1.a	Decentralization and Employee Empowerment	Indicates the degree to which employees are provided with different types of information and participate in decision-making	na
4.B.1.a.1.a.1	Have Control Over Unit or Department	You have a great deal of control over what happens in your unit or department	na
4.B.1.a.1.a.2	Have Influence Over Decisions	You have a great deal of influence over decisions that are made in your unit or department.	na
4.B.1.a.1.a.3	Monitor Data on Quality/costs/Waste/etc.	You monitor data on quality, costs, waste, and productivity	na
4.B.1.a.1.a.4	Determine Work Flow or Order of Tasks	You determine work flow or the order in which tasks are performed	na
4.B.1.a.1.a.5	Invest in New Equipment and Technology	You invest in new equipment and technology	na
4.B.1.a.1.a.6	Develop New Products, Services, and Procedures	You develop new products, services, and procedures	na

4.B.1.a.1.b	Individual versus Team Structure	Identifies the extent to which employees work in intact teams	na
4.B.1.a.1.b.1	Percent of Time in Intact Team	Approximately what percentage of your time do you spend working in an intact team? By intact team we mean a group of 3 or more employees who are jointly responsible for whole work processes and work toward shared goals (e.g., production team; development)	na
4.B.1.a.2	Job Characteristics	Indicates the level of skill variety, task significance, task identity, autonomy, and feedback in this job	na
4.B.1.a.2.a	Skill Variety	The variety of skills required of people in this job	na
4.B.1.a.2.a.1	Job Variety	How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?	na
4.B.1.a.2.a.2	Complex or High Level Skills Required	Your job requires you to use a number of complex or high-level skills.	na
4.B.1.a.2.a.3	Variety of Tasks Required	Your job requires you to perform a variety of tasks.	na
4.B.1.a.2.b	Task Significance	The importance or significance of the tasks performed on this job, as reflected by its effect on the lives or well-being of others	na
4.B.1.a.2.b.1	Significance or Importance of Job	In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?	na
4.B.1.a.2.b.2	Job Quality Affects Lots of People	Your job is one where a lot of people can be affected by how well the work gets done.	na
4.B.1.a.2.b.3	Job Itself Is Very Significant	Your job itself is very significant and important in the broader scheme of things.	na
4.B.1.a.2.c	Task Identity	The extent to which tasks performed on this job can be perceived as contributing to the final product	na
4.B.1.a.2.c.1	Job Involves Whole Piece of Work	To what extent does your job involve doing a 'whole' and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other pe	na
4.B.1.a.2.c.2	Can Do Entire Piece of Work	Your job is arranged so that you can do an entire piece of work from beginning to end.	na
4.B.1.a.2.c.3	Can Finish What You Start	Your job provides you a chance to completely finish the piece of work you began.	na
4.B.1.a.2.d	Autonomy	The amount of freedom in the job, as reflected in a person being able to exercise personal initiative and judgment in task performance	na
4.B.1.a.2.d.1	Autonomy and Freedom in Job	How much autonomy and freedom are there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing your job?	na
4.B.1.a.2.d.2	Chance for Initiative and Judgment	Your job gives you a chance to use your personal initiative and judgment in carrying out the work.	na
4.B.1.a.2.d.3	Opportunity for Independence and Freedom	Your job gives you considerable opportunity for independence and freedom in how you do your job.	na
4.B.1.a.2.e	Feedback	The extent to which this job provides information about how well one is performing	na
4.B.1.a.2.e.1	Extent of Feedback From Doing Job Itself	To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing--aside from any 'feedback' co-workers or supervisors may provide?	na
4.B.1.a.2.e.2	Doing Job Provides Chances for Feedback	Just doing the job provides many chances for you to figure out how well you are doing.	na
4.B.1.a.2.e.3	After Finishing Job, Know Own Performance	After you finish a job, you know whether you performed well.	na

4.B.1.a.3	Job Stability and Rotation	The amount of stability in the job and the extent of job rotation	na
4.B.1.a.3.a	Number of Supervisors in Past Year	How many different supervisors have you had in the past year?	na
4.B.1.a.3.b	Number of Work Teams in Past Year	Approximately how many different work teams have you belonged to during the past year?	na
4.B.1.a.3.c	Number of Work Group Reorganizations in Past Year	In the past year, how many times has your primary work group gone through some kind of reorganization?	na
4.B.1.a.3.d	Number of Times Nature of Job Changed	In the past year, how many times has the nature of your job duties changed dramatically?	na
4.B.1.a.3.e	Job Rotation Practices	Which statement best describes the job rotation practices in your job and your work group?	na
4.B.1.b	Human Resources Systems and Practices	Organizational practices and policies designed to ensure that an organization has employees who are capable of meeting its goals	na
4.B.1.b.1	Recruitment and Selection	Organizational practices, decisions, and processes that affect (a) the capability of an organization to make hiring, promotion, and other personnel decisions, and (b) the number or types of individuals who are willing to apply for or accept a given vacanc	na
4.B.1.b.1.a	Recruitment Operations	Activities involved in implementing recruitment plans (e.g., selecting sources, realistic job preview)	na
4.B.1.b.1.a.1	Sources of People for Current Job	Which of the sources listed below are used to recruit people for your current job?	na
4.B.1.b.1.b	Selection Assessment Methods Used	The methods used for selection or promotion of employees	na
4.B.1.b.1.b.1	Assessment Methods Used to Select for Job	Which of the following assessment methods are used to select people for your current job?	na
4.B.1.b.2	Training and Development	The systematic acquisition of attitudes, concepts, knowledge, roles, or skills that result in improved performance at work	na
4.B.1.b.2.a	Training Methods	The methods used in training programs	na
4.B.1.b.2.a.1	Training Methods Used in Company	Which of the following training methods have been used in company training courses you have attended in the last two years?	na
4.B.1.b.2.b	Training Topics and Content	What trainers intend to teach trainees through training programs	na
4.B.1.b.2.b.1	Areas of Recent Formal Training	In which of the following content areas have you received formal training in the last two years?	na
4.B.1.b.2.c	Extent and Support of Training Activities	The extent to which an organization makes training available to its employees and provides financial support for training activities	na
4.B.1.b.2.c.1	Recent Technical Skill Training	In the last two years, how often have you attended company sponsored job-related technical training (i.e., technical skill training)?	na
4.B.1.b.3	Reward System	Monetary compensation and monetary and non-monetary benefits organizations provide to their employees	na
4.B.1.b.3.a	Basis of Compensation	The extent to which organizations reward individuals based on: (a) their knowledge, skills, and performance, (b) seniority, (c) team performance, (d) organizational performance, and (e) job attributes	na
4.B.1.b.3.a.1	Compensation Package Components	Which of the following is part of your compensation package (i.e., pay)?	na
4.B.1.b.3.b	Benefits	The extent to which employees' compensation includes benefits such as pensions, insurance, paid leave, awards and bonuses, pay for time not worked, etc.	na
4.B.1.b.3.b.1	Benefit Components	Which of the following is part of your benefits?	na

4.B.2	Social Processes	A functional subsystem of organization structure subsuming processes linking people (employees) to their work and to each other and includes elements such as values, goals, leadership, and roles	na
4.B.2.a	Goals	Individual goal setting.	na
4.B.2.a.1	Individual Goal Characteristics	The extent to which an individual's goal is made explicit, and the probability that an individual can attain the goal	na
4.B.2.a.1.a	Achieve Most Important Individual Goal	Realistically, the probability that you will achieve your most important individual work goal this year is:	na
4.B.2.a.1.b	How Many Quantitative Individual Goals	How many of your individual work goals are quantitative (e.g., selling \$100,000 worth of merchandise as opposed to selling as much merchandise as possible).	na
4.B.2.a.2	Goal Feedback	The extent to which an individual is given periodic feedback regarding his or her progress against a goal	na
4.B.2.a.2.a	How Many Specific Individual Goals	How many of your individual work goals are specific -- that is, you will know exactly when you have achieved them?	na
4.B.2.a.2.b	When Get Information on Individual Goals	How often do you get information regarding how close you are to achieving your most important individual work goal (for example, an interim financial report or data on number of units sold)?	na
4.B.2.a.2.c	Informal, Job-Relevant Feedback	To what extent do you receive informal, job-relevant feedback from your supervisor?	na
4.B.2.a.2.d	Meet One-on-One With Supervisor on Goals, Training, and Development	During the past year, how often have you met one-on-one with your immediate supervisor to discuss issues such as your performance, goals, training and development?	na
4.B.2.b	Roles	Characteristics of job incumbents' roles, such as the extent to which they involve conflict and overload	na
4.B.2.b.1	Role Conflict	The extent to which an individual has to deal with conflicting demands	na
4.B.2.b.1.a	Often Receive Conflicting Requests	You often receive conflicting requests from two or more people at work.	na
4.B.2.b.1.b	Work With Groups With Different Focuses	You work with two or more groups who want you to focus on different things.	na
4.B.2.b.1.c	You and Your Supervisor Agree About Job	You and your supervisor agree about what your job should be.	na
4.B.2.b.1.d	Supervisor Makes Conflicting Requests	Your supervisor often asks you to do two or more things that conflict (for example, save a large amount of money while at the same time dramatically increasing quality).	na
4.B.2.b.2	Role Negotiability	The extent to which an individual can negotiate his/her role in an organization	na
4.B.2.b.2.a	Negotiate Changes in Role with Supervisor	You have negotiated changes in the nature of your role at work with your supervisor.	na
4.B.2.b.2.b	Significant Input Into Way You Do Job	You have significant input into the way you do your job.	na
4.B.2.b.3	Role Overload	A discrepancy between the job's demands and one's ability to meet those demands	na
4.B.2.b.3.a	Get Assignments without Adequate Resources	You receive assignments at work without adequate resources and materials to complete them properly.	na
4.B.2.b.3.b	Given Enough Time to Do Work	You are given enough time to do what is expected of you at work.	na
4.B.2.b.3.c	Too Much for One Person to Do	It often seems like you have too much work for one person to do.	na
4.B.2.c	Culture	Patterns of behaviors and social relationships reflecting the assumptions, values, norms, and artifacts shared by members of the organization	na

4.B.2.c.1	Organizational Values	Indicates the importance of different organizational values such as tradition, stability, innovation, and collaboration	na
4.B.2.c.1.a	Guiding Principles of Organization	How important are each of the following concepts, or values, as a guiding principle for your organization as a whole.	na
4.B.2.c.1.a.1	Taking Chances; Going Out on a Limb	Taking chances; going out on a limb	na
4.B.2.c.1.a.10	Providing High Quality Products	Providing high quality products or services; meeting high standards of excellence	na
4.B.2.c.1.a.11	Openness and Honesty	Openness; honesty; keeping employees well informed	na
4.B.2.c.1.a.12	Flexibility, Adapting to Change	Flexibility, adapting to change	na
4.B.2.c.1.a.2	Fairness; Justice	Fairness; justice	na
4.B.2.c.1.a.3	Precision	Precision; paying attention to even the smallest details	na
4.B.2.c.1.a.4	Stability	Stability; keeping things on an even keel	na
4.B.2.c.1.a.5	Getting Things Done	Getting things done; taking decisive or quick action	na
4.B.2.c.1.a.6	Caring About Employees	Caring about employees; showing concern for their well-being	na
4.B.2.c.1.a.7	Innovation	Innovation; finding new and better ways of doing things; openness to new ideas	na
4.B.2.c.1.a.8	Aggressiveness	Aggressiveness; forcefully going after what you want	na
4.B.2.c.1.a.9	Valuing Customers	Valuing customers; emphasizing customer service	na
4.B.2.d	Supervisor Role	The nature of supervisory leadership	na
4.B.2.d.1	Supervisor Friendly and Supportive	To what extent does your supervisor act in a friendly and supportive manner? For example, does he/she show concern for members of your work group and respect for your ideas?	na
4.B.2.d.2	Supervisor Takes Active Role	To what extent does your supervisor take an active role in directing your work group's activities by setting goals, planning and scheduling work, assigning tasks, and making sure that each person knows what he/she should be doing?	na
4.B.2.d.3	Supervisor Provides Clear Vision	To what extent does your supervisor provide members of your work group with a clear vision of where the group is going and keep everyone fully committed to the work at hand?	na
4.B.2.d.4	Supervisor Solves Problems	To what extent does your supervisor quickly and effectively solve problems, even difficult problems, that come up in your work group?	na
4.C	Work Context	Physical and social factors that influence the nature of work	
4.C.1	Interpersonal Relationships	This category describes the context of the job in terms of human interaction processes	
4.C.1.a	Communication	Types and frequency of interactions with other people that are required as part of this job.	
4.C.1.a.2	Communication Methods	How frequently does this job require the use of the following communication methods?	
4.C.1.a.2.c	Public Speaking	How often do you have to perform public speaking in this job?	
4.C.1.a.2.f	Telephone	How often do you have telephone conversations in this job?	
4.C.1.a.2.h	Electronic Mail	How often do you use electronic mail in this job?	
4.C.1.a.2.j	Letters and Memos	How often does the job require written letters and memos?	
4.C.1.a.2.l	Face-to-Face Discussions	How often do you have to have face-to-face discussions with individuals or teams in this job?	
4.C.1.a.4	Contact With Others	How much does this job require the worker to be in contact with others (face-to-face, by telephone, or otherwise) in order to perform it?	

4.C.1.b	Role Relationships	Importance of different types of interactions with others both inside and outside the organization
4.C.1.b.1	Job Interactions	How important are interactions requiring the worker to:
4.C.1.b.1.e	Work With Work Group or Team	How important is it to work with others in a group or team in this job?
4.C.1.b.1.f	Deal With External Customers	How important is it to work with external customers or the public in this job?
4.C.1.b.1.g	Coordinate or Lead Others	How important is it to coordinate or lead others in accomplishing work activities in this job?
4.C.1.c	Responsibility for Others	Amount of responsibility the worker has for other workers as a part of this job
4.C.1.c.1	Responsible for Others' Health and Safety	How much responsibility is there for the health and safety of others in this job?
4.C.1.c.2	Responsibility for Outcomes and Results	How responsible is the worker for work outcomes and results of other workers?
4.C.1.d	Conflictual Contact	Amount of conflict that the worker will encounter as part of this job
4.C.1.d.1	Frequency of Conflict Situations	How often are there conflict situations the employee has to face in this job?
4.C.1.d.2	Deal With Unpleasant or Angry People	How frequently does the worker have to deal with unpleasant, angry, or discourteous individuals as part of the job requirements?
4.C.1.d.3	Deal With Physically Aggressive People	How frequently does this job require the worker to deal with physical aggression of violent individuals?
4.C.2	Physical Work Conditions	This category describes the work context as it relates to the interactions between the worker and the physical job environment
4.C.2.a	Work Setting	Description of physical surroundings that the worker will face as part of this job
4.C.2.a.1	Frequency Required to Work:	How frequently does this job require the worker to work:
4.C.2.a.1.a	Indoors, Environmentally Controlled	How often does this job require working indoors in environmentally controlled conditions?
4.C.2.a.1.b	Indoors, Not Environmentally Controlled	How often does this job require working indoors in non-controlled environmental conditions (e.g., warehouse without heat)?
4.C.2.a.1.c	Outdoors, Exposed to Weather	How often does this job require working outdoors, exposed to all weather conditions?
4.C.2.a.1.d	Outdoors, Under Cover	How often does this job require working outdoors, under cover (e.g., structure with roof but no walls)?
4.C.2.a.1.e	In an Open Vehicle or Equipment	How often does this job require working in an open vehicle or equipment (e.g., tractor)?
4.C.2.a.1.f	In an Enclosed Vehicle or Equipment	How often does this job require working in a closed vehicle or equipment (e.g., car)?
4.C.2.a.3	Physical Proximity	To what extent does this job require the worker to perform job tasks in close physical proximity to other people?
4.C.2.b	Environmental Conditions	Description of extreme environmental conditions the worker will be placed in as part of this job
4.C.2.b.1	Frequency in Environmental Conditions	How often during a usual work period is the worker exposed to the following conditions:
4.C.2.b.1.a	Sounds, Noise Levels Are Distracting or Uncomfortable	How often does this job require working exposed to sounds and noise levels that are distracting or uncomfortable?
4.C.2.b.1.b	Very Hot or Cold Temperatures	How often does this job require working in very hot (above 90 F degrees) or very cold (below 32 F degrees) temperatures?
4.C.2.b.1.c	Extremely Bright or Inadequate Lighting	How often does this job require working in extremely bright or inadequate lighting conditions?
4.C.2.b.1.d	Exposed to Contaminants	How often does this job require working exposed to contaminants (such as pollutants, gases, dust or odors)?

4.C.2.b.1.e	Cramped Work Space, Awkward Positions	How often does this job require working in cramped work spaces that requires getting into awkward positions?
4.C.2.b.1.f	Exposed to Whole Body Vibration	How often does this job require exposure to whole body vibration (e.g., operate a jackhammer)?
4.C.2.c	Job Hazards	Descriptions of types of hazardous conditions the worker could be exposed to as part of this job. This includes the frequency of exposure, and the likelihood and degree of injury if exposed.
4.C.2.c.1	Frequency of Exposure to Job Hazards	How often does this job require the worker to be exposed to the following hazards?
4.C.2.c.1.a	Exposed to Radiation	How often does this job require exposure to radiation?
4.C.2.c.1.b	Exposed to Disease or Infections	How often does this job require exposure to disease/infections?
4.C.2.c.1.c	Exposed to High Places	How often does this job require exposure to high places?
4.C.2.c.1.d	Exposed to Hazardous Conditions	How often does this job require exposure to hazardous conditions?
4.C.2.c.1.e	Exposed to Hazardous Equipment	How often does this job require exposure to hazardous equipment?
4.C.2.c.1.f	Exposed to Minor Burns, Cuts, Bites, or Stings	How often does this job require exposure to minor burns, cuts, bites, or stings?
4.C.2.c.2	Likelihood of Injury From Job Hazards	What is the likelihood that the worker would be injured as a result of being exposed to the following hazards while performing this job?
4.C.2.c.3	Degree of Injury	If injury, due to exposure to the following hazards, were to occur while performing this job, how serious would be the likely outcome?
4.C.2.d	Body Positioning	Amount of time the worker will spend in a variety of physical positions on this job
4.C.2.d.1	Time Spent in Body Positions	How much time in a usual work period does the worker spend:
4.C.2.d.1.a	Spend Time Sitting	How much does this job require sitting?
4.C.2.d.1.b	Spend Time Standing	How much does this job require standing?
4.C.2.d.1.c	Spend Time Climbing Ladders, Scaffolds, or Poles	How much does this job require climbing ladders, scaffolds, or poles?
4.C.2.d.1.d	Spend Time Walking and Running	How much does this job require walking and running?
4.C.2.d.1.e	Spend Time Kneeling, Crouching, Stooping, or Crawling	How much does this job require kneeling, crouching, stooping or crawling?
4.C.2.d.1.f	Spend Time Keeping or Regaining Balance	How much does this job require keeping or regaining your balance?
4.C.2.d.1.g	Spend Time Using Your Hands to Handle, Control, or Feel Objects, Tools, or Controls	How much does this job require using your hands to handle, control, or feel objects, tools or controls?
4.C.2.d.1.h	Spend Time Bending or Twisting the Body	How much does this job require bending or twisting your body?
4.C.2.d.1.i	Spend Time Making Repetitive Motions	How much does this job require making repetitive motions?
4.C.2.e	Work Attire	Dress requirements of this job
4.C.2.e.1	Frequency of Wearing Work Attire	How often does the worker wear:

4.C.2.e.1.d	Wear Common Protective or Safety Equipment such as Safety Shoes, Glasses, Gloves, Hearing Protection, Hard Hats, or Life Jackets	How much does this job require wearing common protective or safety equipment such as safety shoes, glasses, gloves, hard hats or live jackets?
4.C.2.e.1.e	Wear Specialized Protective or Safety Equipment such as Breathing Apparatus, Safety Harness, Full Protection Suits, or Radiation Protection	How much does this job require wearing specialized protective or safety equipment such as breathing apparatus, safety harness, full protection suits, or radiation protection?
4.C.3	Structural Job Characteristics	This category involves the relationships or interactions between the worker and the structural characteristics of the job
4.C.3.a	Criticality of Position	Amount of impact the worker has on final products and their outcomes
4.C.3.a.1	Consequence of Error	How serious would the result usually be if the worker made a mistake that was not readily correctable?
4.C.3.a.2	Impact of Decisions	The frequency and nature of the impact of worker's decisions on the organization
4.C.3.a.2.a	Impact of Decisions on Co-workers or Company Results	How do the decisions an employee makes impact the results of co-workers, clients or the company?
4.C.3.a.2.b	Frequency of Decision Making	How frequently is the worker required to make decisions that affect other people, the financial resources, and/or the image and reputation of the organization?
4.C.3.a.4	Freedom to Make Decisions	How much decision making freedom, without supervision, does the job offer?
4.C.3.b	Routine versus Challenging Work	The relative amounts of routine versus challenging work the worker will perform as part of this job
4.C.3.b.2	Degree of Automation	How automated is the job?
4.C.3.b.4	Importance of Being Exact or Accurate	How important is being very exact or highly accurate in performing this job?
4.C.3.b.7	Importance of Repeating Same Tasks	How important is repeating the same physical activities (e.g., key entry) or mental activities (e.g., checking entries in a ledger) over and over, without stopping, to performing this job?
4.C.3.b.8	Structured versus Unstructured Work	To what extent is this job structured for the worker, rather than allowing the worker to determine tasks, priorities, and goals?
4.C.3.c	Competition	Amount of competition that the worker will face as part of this job
4.C.3.c.1	Level of Competition	To what extent does this job require the worker to compete or to be aware of competitive pressures?
4.C.3.d	Pace and Scheduling	Description of the role that time plays in the way the worker performs the tasks required by this job
4.C.3.d.1	Time Pressure	How often does this job require the worker to meet strict deadlines?
4.C.3.d.3	Pace Determined by Speed of Equipment	How important is it to this job that the pace is determined by the speed of equipment or machinery? (This does not refer to keeping busy at all times on this job.)
4.C.3.d.4	Work Schedules	How regular are the work schedules for this job?
4.C.3.d.8	Duration of Typical Work Week	Number of hours typically worked in one week.
5	Occupation-Specific Information	Occupation-Specific Information
5.A	Tasks	Occupation-Specific Tasks
5.A.1	Task List	List of tasks for each occupation
6	Labor Market Characteristics	Labor Market Characteristics

6.A	Labor Market Information	Labor Market Information
6.A.1	Occupational Statistics	Information related to economic conditions and labor force characteristics of occupations
6.B	Occupational Outlook	Occupational Outlook
6.B.1	Occupational Projections	Projections of future economic conditions and labor force characteristics of occupations

Attachment 3

Required Level of Education (RL)

1. **Less than a High School Diploma**
2. **High School Diploma** (or GED or High School Equivalence Certificate)
3. **Post-Secondary Certificate** – awarded for training completed after high school (for example, in Personnel Services, Engineering-related Technologies, Vocational Home Economics, Construction Trades, Mechanics and Repairers, Precision Production Trades)
4. **Some College Courses**
5. **Associate’s Degree** (or other 2-year degree)
6. **Bachelor’s Degree**
7. **Post-Baccalaureate Certificate** – awarded for completion of an organized program of study; designed for people who have completed a Baccalaureate degree but do not meet the requirements of academic degrees carrying the title of Master.
8. **Master’s Degree**
9. **Post-Master’s Certificate** – awarded for completion of an organized program of study; designed for people who have completed a Master’s degree but do not meet the requirements of academic degrees at the doctoral level.
10. **First Professional Degree** – awarded for completion of a program that
 - requires at least 2 years of college work before entrance into the program,
 - includes a total of at least 6 academic years of work to complete, and
 - provides all remaining academic requirements to begin practice in a profession.
11. **Doctoral Degree**
12. **Post-Doctoral Training**

RELATED WORK EXPERIENCE (RW)

1. None
2. Up to and including 1 month
3. Over 1 month, up to and including 3 months
4. Over 3 months, up to and including 6 months
5. Over 6 months, up to and including 1 year
6. Over 1 year, up to and including 2 years
7. Over 2 years, up to and including 4 years
8. Over 4 years, up to and including 6 years
9. Over 6 years, up to and including 8 years
10. Over 8 years, up to and including 10 years
11. Over 10 years

ON-SITE OR IN-PLANT TRAINING (PT)

1. None
2. Up to and including 1 month
3. Over 1 month, up to and including 3 months
4. Over 3 months, up to and including 6 months
5. Over 6 months, up to and including 1 year
6. Over 1 year, up to and including 2 years
7. Over 2 years, up to and including 4 years
8. Over 4 years, up to and including 10 years
9. Over 10 years

ON-THE-JOB TRAINING (OJ)

1. None or short demonstration
2. Anything beyond short demonstration, up to and including 1 month
3. Over 1 month, up to and including 3 months
4. Over 3 months, up to and including 6 months
5. Over 6 months, up to and including 1 year
6. Over 1 year, up to and including 2 years
7. Over 2 years, up to and including 4 years
8. Over 4 years, up to and including 10 years
9. Over 10 years