

## Survey Index



# IT & Engineering Salary Survey

For the engineering jobs, you will want to review your organization's job title and job description.

Does the incumbent spend 80% or more of his or her time in one of the following functions: Design, Methods & Process, Quality/Testing, or Sales/Applications? If yes, select from those jobs designated by these functions. (Example: Design Engineering, Manufacturing / Process Engineering.) Then, at the end of the row of data input form, you will use the drop down box to select a degree field from one of the following: Aeronautical / Aerospace, Chemical, Electrical / Electronics, Industrial, Mechanical, Other, or Unknown.

If the incumbent splits his or her time across functional areas, use (select) the job description that reflects his or her degree or area of expertise. (Example: Aeronautical/ Aerospace Engineer, Mechanical Engineer, Chemical Engineer or Manufacturing / Process Engineer etc.)

For IT jobs **11121 - 11135**, please make sure to use the drop down box at the end of the row to indicate the ERP system your incumbent is working on.

Help Line: 503-485-9343 or \_\_\_\_\_

Number	Title	Family	Potential Match	Confirmed Match
10101	Aeronautical/ Aerospace Engineer I (Associate)	Aero		
10102	Aeronautical/ Aerospace Engineer II (Experienced)	Aero		
10103	Aeronautical/ Aerospace Engineer III (Senior)	Aero		
10104	Aeronautical/ Aerospace Engineer IV (Principal)	Aero		
10105	Aeronautical/ Aerospace Engineer V (Senior Principal)	Aero		
10111	Chemical Engineer I (Associate)	Chem		
10112	Chemical Engineer II (Experienced)	Chem		
10113	Chemical Engineer III (Senior)	Chem		
10114	Chemical Engineer IV (Principal)	Chem		
10115	Chemical Engineer V (Senior Principal)	Chem		
10121	Chemist I	Chemist		
10122	Chemist II	Chemist		
10123	Chemist III	Chemist		
10124	Chemist IV	Chemist		
10131	Civil Engineer I (Associate)	Civil		
10132	Civil Engineer II (EIT)	Civil		
10133	Civil Engineer III (PE)	Civil		
10134	Civil Engineer IV (PE) (Principal)	Civil		
10135	Civil Engineer V (PE) (Senior Principal)	Civil		
10136	Civil Engineering Manager	Civil		
10141	Design Engineering Technician I (Entry)	Design		
10142	Design Engineering Technician II (Experienced)	Design		
10143	Design Engineering Technician III (Advanced)	Design		
10144	Designer (Non-Degreed Engineer)	Design		
10145	Senior Designer (Non-Degreed Engineer)	Design		
10151	Design Engineer I (Associate)	Design		
10152	Design Engineer II (Experienced)	Design		
10153	Design Engineer III (Senior)	Design		
10154	Design Engineer IV (Principal)	Design		
10155	Design Engineer V (Senior Principal)	Design		
10159	Engineering Project Manager (R&D)	Design		
10161	Design Engineering Manager	Design		

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Number	Title	Family	Potential Match	Confirmed Match
10171	Technical Writer I	Document		
10172	Technical Writer II	Document		
10173	Technical Writer III	Document		
10181	Drafting Supervisor	Document		
10182	Drafting and Documentation Manager	Document		
10191	Electrical/ Electronics Engineer I (Associate)	Elect		
10192	Electrical/ Electronics Engineer II (Experienced)	Elect		
10193	Electrical/ Electronics Engineer III (Senior)	Elect		
10194	Electrical/ Electronics Engineer IV (Principal)	Elect		
10195	Electrical/ Electronics Engineer V (Senior Principal)	Elect		
10201	Generic Engineer I (Associate)	Generic		
10202	Generic Engineer II (Experienced)	Generic		
10203	Generic Engineer III (Senior)	Generic		
10204	Generic Engineer IV (Principal)	Generic		
10205	Generic Engineer V (Senior Principal)	Generic		
10211	Industrial Engineer I (Associate)	Industrial		
10212	Industrial Engineer II (Experienced)	Industrial		
10213	Industrial Engineer III (Senior)	Industrial		
10214	Industrial Engineer IV (Principal)	Industrial		
10215	Industrial Engineer V (Senior Principal)	Industrial		
10221	Mechanical Engineer I (Associate)	Mech		
10222	Mechanical Engineer II (Experienced)	Mech		
10223	Mechanical Engineer III (Senior)	Mech		
10224	Mechanical Engineer IV (Principal)	Mech		
10225	Mechanical Engineer V (Senior Principal)	Mech		
10231	CNC Programmer I	Mfg / Process		
10232	CNC Programmer II (Advanced)	Mfg / Process		
10235	Methods & Process Technician I (Entry)	Mfg / Process		
10236	Methods & Process Technician II (Experienced)	Mfg / Process		
10237	Methods & Process Technician III (Advanced)	Mfg / Process		
10241	Six Sigma Master Black Belt	Mfg / Process		
10242	Continuous Improvement / Lean Coordinator	Mfg / Process		
10243	Manager of Lean Enterprise	Mfg / Process		
10244	Top Management of Lean Enterprise	Mfg / Process		
10251	Manufacturing / Process Engineer I (Associate)	Mfg / Process		
10252	Manufacturing / Process Engineer II (Experienced)	Mfg / Process		
10253	Manufacturing / Process Engineer III (Senior)	Mfg / Process		
10254	Manufacturing / Process Engineer IV (Principal)	Mfg / Process		
10255	Manufacturing / Process Engineer V (Senior Principal)	Mfg / Process		
10261	Manufacturing Engineering Manager	Mfg / Process		
10271	Laboratory/Test Technician I (Entry)	Quality / Test		
10272	Laboratory/Test Technician II (Experienced)	Quality / Test		
10273	Laboratory/Test Technician III (Advanced)	Quality / Test		
10275	Quality / Test Engineer I (Associate)	Quality / Test		
10276	Quality / Test Engineer II (Experienced)	Quality / Test		
10277	Quality / Test Engineer III (Senior)	Quality / Test		
10278	Quality / Test Engineer IV (Principal)	Quality / Test		
10279	Quality / Test Engineer V (Senior Principal)	Quality / Test		
10281	Sales / Applications Engineer I (Associate)	Sales		
10282	Sales / Applications Engineer II (Experienced)	Sales		

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Number	Title	Family	Potential Match	Confirmed Match
10283	Sales / Applications Engineer III (Senior)	Sales		
10284	Sales / Applications Engineer IV (Principal)	Sales		
10285	Sales / Applications Engineer V (Senior Principal)	Sales		
10291	Software Engineer I (Associate)	Software		
10292	Software Engineer II (Experienced)	Software		
10293	Software Engineer III (Senior)	Software		
10294	Software Engineer IV (Principal)	Software		
10295	Software Engineer V (Senior Principal)	Software		
10301	Engineering Supervisor	Eng Mgmt		
10305	Director of Engineering	Eng Mgmt		
10311	Vice President of Engineering	Eng Mgmt		
11101	Chief Information Officer (CIO)	IT Mgmt		
11103	IT Director	IT Mgmt		
11105	IT Manager (Single Location)	IT Mgmt		
11106	IT Manager (Corporate Organizations)	IT Mgmt		
11108	IT Project Manager	IT Mgmt		
11111	Business Analyst I (Entry)	Business		
11112	Business Analyst II (Intermediate)	Business		
11113	Business Analyst III (Advanced)	Business		
11114	Business Analyst IV (Principal)	Business		
11121	<b>ERP Business Analyst I (Entry)</b>	<b>Business</b>		
11122	<b>ERP Business Analyst II (Experienced)</b>	<b>Business</b>		
11123	<b>ERP Business Analyst III (Advanced)</b>	<b>Business</b>		
11124	<b>ERP Business Analyst IV (Principal)</b>	<b>Business</b>		
11131	<b>ERP Programming Analyst I (Entry)</b>	<b>Business</b>		
11132	<b>ERP Programming Analyst II (Experienced)</b>	<b>Business</b>		
11133	<b>ERP Programming Analyst III (Advanced)</b>	<b>Business</b>		
11134	<b>ERP Programming Analyst IV (Principal)</b>	<b>Business</b>		
11135	<b>ERP Project/Programming Analyst Manager</b>	<b>Business</b>		
11139	Data Warehousing Administrator	Database		
11141	Data Entry Supervisor	Database		
11143	Data Security Analyst	Database		
11144	Data Security Manager	Database		
11151	Database Administrator	Database		
11152	Database Analyst II (Experienced)	Database		
11153	Database Analyst III (Advanced)	Database		
11154	Database Analyst IV (Principal)	Database		
11155	Database Manager	Database		
11171	Human Resources Information Systems Analyst I	HRIS		
11172	Human Resources Information Systems Analyst II	HRIS		
11173	Human Resources Information Systems Manager	HRIS		
11177	Computer Technician I (Entry)	Maint		
11178	Computer Technician II (Experienced)	Maint		
11179	Computer Technician III Advanced)	Maint		
11181	Network Engineer I (Entry)	Network		
11182	Network Engineer II (Experienced)	Network		
11183	Network Engineer III (Advanced)	Network		
11185	Systems Administrator	Network		
11187	Unix Administrator, Senior	Network		
11188	Network Administrator	Network		

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Number	Title	Family	Potential Match	Confirmed Match
11189	LAN Administrator/Mgr. (Single Facility)	Network		
11190	WAN Administrator/Manager	Network		
11191	LAN/WAN Analyst II (Experienced)	Network		
11192	LAN/WAN Analyst III (Advanced)	Network		
11195	Computer Operator I (Entry)	Oper Systems		
11196	Computer Operator II (Experienced)	Oper Systems		
11197	Computer Operator III (Advanced)	Oper Systems		
11201	Computer Operations Supervisor	Oper Systems		
11202	Computer Operations Manager	Oper Systems		
11205	Operating Systems Programmer I (Entry)	Oper Systems		
11206	Operating Systems Programmer II (Experienced)	Oper Systems		
11207	Operating Systems Programmer III (Advanced)	Oper Systems		
11208	Operating Systems Programming Supervisor	Oper Systems		
11209	Manager, Computer Operations and Operating Systems Programming	Oper Systems		
11211	Application Developer / Programmer I (Entry)	Apps Dev / Prog		
11212	Application Developer / Programmer II (Experienced)	Apps Dev / Prog		
11213	Application Developer / Programmer III (Advanced)	Apps Dev / Prog		
11214	Application Developer / Programmer IV (Principal)	Apps Dev / Prog		
11215	Application Developer / Programmer Manager	Apps Dev / Prog		
11221	Application Programming Analyst I (Entry)	Sys Analysis / Prog		
11222	Application Programming Analyst II (Experienced)	Sys Analysis / Prog		
11223	Application Programming Analyst III (Advanced)	Sys Analysis / Prog		
11224	Application Programming Analyst IV (Principal)	Sys Analysis / Prog		
11225	Application Programming Analyst Manager	Sys Analysis / Prog		
11226	Mgr App Systems Analysis/Prog and Op Systems Programming	Overall Prog/Sys Mgmt		
11232	Telecommunications Technician II (Experienced)	Telecom		
11233	Telecommunications Technician III (Advanced)	Telecom		
11236	Telecommunications Programmer/ Systems Analyst I (Entry)	Telecom		
11237	Telecommunications Programmer/ Systems Analyst II (Experienced)	Telecom		
11238	Telecommunications Programmer/ Systems Analyst III (Advanced)	Telecom		
11241	Telecommunications Ops Mgr, Data and Voice Communications	Telecom		
11242	Director of Telecommunications Services	Telecom		
11251	Help Desk I (Entry)	User Support		
11252	Help Desk II (Experienced)	User Support		
11253	Help Desk III (Advanced)	User Support		
11255	Help Desk Manager	User Support		
11262	PC Specialist	User Support		
11263	Technical Support Analyst	User Support		
11265	Technology Trainer	User Support		
11271	Web Administrator	Web		
11272	Webmaster	Web		
11273	Web Content Administrator	Web		
11275	Web Graphics Designer I	Web		
11276	Web Graphics Designer II	Web		
11281	Web Software Developer I (Entry)	Web		
11282	Web Software Developer II (Experienced)	Web		
11283	Web Software Developer III (Advanced)	Web		
11284	Web Software Developer IV (Principal)	Web		

## Job Descriptions



## IT & Engineering Salary Survey

Number	Job Title	Family	Job Description
10101	Aeronautical/ Aerospace Engineer I (Associate)	Aero	First of five levels of aeronautical/aerospace engineering. Perform a variety of engineering work in designing, constructing, and testing aircraft, missiles, and spacecraft or related components. May conduct basic and applied research to evaluate adaptability of materials and equipment to aircraft design and manufacture. May recommend improvements in testing equipment and techniques. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is an entry-level position and requires knowledge and understanding of basic concepts and procedures. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10102	Aeronautical/ Aerospace Engineer II (Experienced)	Aero	Second of five levels of aeronautical/aerospace engineering. Perform a variety of engineering work in designing, constructing, and testing aircraft, missiles, and spacecraft or related components. May conduct basic and applied research to evaluate adaptability of materials and equipment to aircraft design and manufacture. May recommend improvements in testing equipment and techniques. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.
10103	Aeronautical/ Aerospace Engineer III (Senior)	Aero	Third of five levels of aeronautical/aerospace engineering. Perform a variety of engineering work in designing, constructing, and testing aircraft, missiles, and spacecraft or related components. May conduct basic and applied research to evaluate adaptability of materials and equipment to aircraft design and manufacture. May recommend improvements in testing equipment and techniques. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.

## Job Descriptions

Number	Job Title	Family	Job Description
10104	Aeronautical/ Aerospace Engineer IV (Principal)	Aero	Fourth of five levels of aeronautical/aerospace engineering. Perform a variety of engineering work in designing, constructing, and testing aircraft, missiles, and spacecraft or related components. May conduct basic and applied research to evaluate adaptability of materials and equipment to aircraft design and manufacture. May recommend improvements in testing equipment and techniques. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians. <b>Report an Application Code.</b>
10105	Aeronautical/ Aerospace Engineer V (Senior Principal)	Aero	Fifth of five levels of aeronautical/aerospace engineering. Perform a variety of engineering work in designing, constructing, and testing aircraft, missiles, and spacecraft or related components. May conduct basic and applied research to evaluate adaptability of materials and equipment to aircraft design and manufacture. May recommend improvements in testing equipment and techniques. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. This is a senior principal level design position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10111	Chemical Engineer I (Associate)	Chem	First of five levels of chemical engineering. Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is an entry-level position and requires knowledge and understanding of basic concepts and procedures. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10112	Chemical Engineer II (Experienced)	Chem	Second of five levels of chemical engineering. Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.

## Job Descriptions

Number	Job Title	Family	Job Description
10113	Chemical Engineer III (Senior)	Chem	Third of five levels of chemical engineering. Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.
10114	Chemical Engineer IV (Principal)	Chem	Fourth of five levels of chemical engineering. Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.
10115	Chemical Engineer V (Senior Principal)	Chem	Fifth of five levels of chemical engineering. Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. This is a senior principal level design position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10121	Chemist I	Chemist	First level of four levels of professional chemistry work. The job typically requires a bachelor's degree in chemistry with less than 1 year of experience, or equivalent. Incumbents perform chemical tests and analyses using standard methods and generally prescribed procedures. Incumbents may carry out specific phases of more complex research projects under the direction of higher classified chemists.
10122	Chemist II	Chemist	Second of four levels of professional chemistry work. The job typically requires a bachelor's degree in chemistry with 3+ years of experience or an advanced degree, or equivalent. Incumbents perform advanced troubleshooting or analyses using chemical tests requiring judgment to select from multiple possible approaches. Incumbents may lead research projects under the direction of a manager or supervisor. Work assignments are of greater difficulty or larger financial impact than those given to first level incumbents.

## Job Descriptions

Number	Job Title	Family	Job Description
10123	Chemist III	Chemist	Third of four levels of professional chemistry work. The job typically requires a bachelor's degree in chemistry with 5+ years of experience or an advanced degree and 2+ years of experience, or equivalent. Requires considerable knowledge of a specialized field of chemistry. Solves complex technical problems using chemical tests requiring creative approaches in the application of procedures. Designs experiments, conducts research and analysis, develops formulas, processes, etc., uses specialized techniques. Identifies questionable research results and verifies the accuracy of data or directs others in so doing. Work assignments are of greater difficulty and larger financial impact. Provides work leadership and direction to other professional and technical staff with respect to project methodology and identification of project tasks.
10124	Chemist IV	Chemist	Fourth of four levels of professional chemistry work; top non-supervisor. The job typically requires an advanced degree in chemistry (often a doctorate degree) with 6+ years of experience, or equivalent. Requires advanced knowledge of a specialized field of chemistry. Solves the most complex technical problems using chemical tests requiring creative approaches in the application of procedures. Designs experiments, conducts research and analysis, develops formulas, processes, etc., uses specialized techniques. Identifies questionable research results and verifies the accuracy of data or directs others in so doing. Work assignments are of the greatest difficulty and largest financial impact. Provides work leadership and direction to other professional and technical staff working on projects critical to the organization.
10131	Civil Engineer I (Associate)	Civil	First of five levels of civil engineering. Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units. Include architectural, structural, traffic, ocean, and geo-technical engineers. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of designs. Work may include responding to a customer request for a particular design. The typical cycle includes conceptualizing, developing drawings, obtaining approval, preparing specifications, reviewing bids and monitoring construction. This is an entry-level position and requires knowledge and understanding of basic concepts and procedures. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10132	Civil Engineer II (EIT)	Civil	Second of five levels of civil engineering. Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units. Include architectural, structural, traffic, ocean, and geo-technical engineers. The job typically requires an engineering degree and 2+ years of experience or a master's degree and less than 1 year of experience. Jobs at this level will typically have an engineer in training (EIT) certification. Work primarily is involved with the development or improvement of designs. Work may include creation of previously non-existent or modification of existing designs. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing drawings, obtaining approval, preparing specifications, reviewing bids and monitoring construction. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.
10133	Civil Engineer III (PE)	Civil	Third of five levels of civil engineering. Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units. Include architectural, structural, traffic, ocean, and geo-technical engineers. The job typically requires an engineering degree and 4+ years of experience or a master's degree and 2+ years of experience. Jobs at this level will typically have a professional engineer (PE) certification. Work primarily is involved with the development or improvement of designs. Work may include creation of previously non-existent or modification of existing designs. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing drawings, obtaining approval, preparing specifications, reviewing bids and monitoring construction. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.

## Job Descriptions

Number	Job Title	Family	Job Description
10134	Civil Engineer IV (PE) (Principal)	Civil	Fourth of five levels of civil engineering. Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units. Include architectural, structural, traffic, ocean, and geo-technical engineers. The job typically requires an engineering degree and 7+ years of experience or a master's degree and 4+ years of experience. Jobs at this level will typically have a professional engineer (PE) certification. Work primarily is involved with the development or improvement of actual designs. Work may include creation of previously non-existent designs or modification of existing designs. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing drawings, obtaining approval, preparing specifications, reviewing bids and monitoring construction. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.
10135	Civil Engineer V (PE) (Senior Principal)	Civil	Fifth of five levels of civil engineering. Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units. Include architectural, structural, traffic, ocean, and geo-technical engineers. The job typically requires a bachelor's of science degree and 10+ years of experience or a master's degree and 7+ years of experience. Jobs at this level will typically have a professional engineer (PE) certification. Work primarily is involved with the development or improvement of designs. Work may include creation of previously non-existent designs or modification of existing designs. This is a senior principal level design position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10136	Civil Engineering Manager	Civil	Manager in charge of a civil engineering group. The job typically requires a bachelor's or master's degree in engineering or an engineering degree with a master's degree in public or business administration and significant experience, or equivalent. Work includes project administration and may include client relations. Work may include responding to a customer request for a particular process or design. The manager's role is the first level of engineering where management of people is a primary function. Work includes planning, supervising and coordinating all phases of a project or departmental function. Initiates procedures, methods and equipment for development of projects. Approves designs and resultant work. Provides consultation on engineering matters as requested.
10141	Design Engineering Technician I (Entry)	Design	First of three levels of design technician work. The job typically requires completion of a formal technical program and no experience, or equivalent. Work assignments are varied, but limited in scope and complexity. Incumbents assist engineering staff with design, testing, prototype building, or other activities relating to design or reliability. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Work may include lifting, handling or maintaining equipment or operation of production or process equipment. Supervision is readily available and work is usually reviewed by more experienced staff. Field Service Technicians are not included.
10142	Design Engineering Technician II (Experienced)	Design	Second of three levels of design technician work. The job typically requires completion of a formal technical program and 2+ years of experience, or equivalent. Work assignments are varied, and of moderate scope and complexity. Incumbents assist engineering staff with design, testing, prototype building, or other activities relating to design or reliability. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Work may include lifting, handling or maintaining equipment or operation of production or process equipment. Supervision received is limited. Field Service Technicians are not included.

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Number	Job Title	Family	Job Description
10143	Design Engineering Technician III (Advanced)	Design	Third of three levels of design technician work. The job typically requires completion of a formal technical program and 5+ years of experience, or equivalent. Work assignments are of greatest variety and complexity. Incumbents assist engineering staff with design, testing, prototype building, or other activities relating to design or reliability. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Work may include providing training and work direction for other technicians. Work may include lifting, handling or maintaining equipment or operation of production or process equipment. Supervision received is limited. Field Service Technicians are not included.
10144	Designer (Non-Degreed Engineer)	Design	Experienced member of the engineering staff, typically with a two-year technical or other non-engineering degree, functioning in an engineering capacity. This job is often an outgrowth of drafting, technician, machine building, machinist or similar occupation. Incumbents will typically have at least 8 years of practical experience and a strong aptitude for engineering work.
10145	Senior Designer (Non-Degreed Engineer)	Design	Highly experienced member of the engineering staff, typically with a two-year technical or other non-engineering degree, functioning in an engineering capacity. This job is often an outgrowth of drafting, technician, machine building, machinist or similar occupation. Incumbents will typically have at least 10 years of practical experience and a strong aptitude for engineering work.
10151	Design Engineer I (Associate)	Design	First of five levels of design engineering. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is an entry-level position and requires knowledge and understanding of basic concepts and procedures. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10152	Design Engineer II (Experienced)	Design	Second of five levels of design engineering. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers. Please report engineering degree.
10153	Design Engineer III (Senior)	Design	Third of five levels of design engineering. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.

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Number	Job Title	Family	Job Description
10154	Design Engineer IV (Principal)	Design	Fourth of five levels of design engineering. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.
10155	Design Engineer V (Senior Principal)	Design	Fifth of five levels of design engineering. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. This is a senior principal level design position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10159	Engineering Project Manager (R&D)	Design	This is an experienced professional job in the engineering or R&D Department charged with responsibility for leading product development teams. The job typically requires a technical bachelor's of science degree, but not necessarily an engineering degree and 5+ years of technical product development from concept to market. Typically reports to an engineering or R&D director. Leads cross-functional teams charged with developing new products. Concepts may originate in a marketing or sales area or from working directly with customers. Sets the agenda for project meetings and timelines for completion of steps in the project and monitors the progress of project team members on assignments. Develops and manages the project budget to ensure the cost effectiveness of the project and works with management to gather necessary resources to facilitate project work. Leads regular team meetings to plan project activities and share progress among team members. The project manager coordinates testing to ensure reliability of products and works with sales and field service staff to ensure that end-users are satisfied.
10161	Design Engineering Manager	Design	Manager in charge of a design engineering group. The job typically requires a bachelor's or master's degree in engineering or an engineering degree with a master's degree in business administration and significant experience, or equivalent. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. The manager's role is the first level of engineering where management of people is a primary function. Work includes planning, supervising and coordinating all phases of design and testing. Initiates procedures, methods and equipment for development of projects. Approves product designs and resultant prototypes. Provides consultation on engineering matters as requested. Work primarily is involved with the development or improvement of actual products or designs.
10171	Technical Writer I	Document	First of three levels of professional technical writing work. The job typically requires an associate's degree and less than 1 year of experience, or equivalent. Under general supervision, writes, and edits material for reports, manuals, briefs, proposals, instructions, catalogs, and related technical and administrative publications concerned with work methods and procedures, and the installation, operation, and maintenance of machinery and other equipment. Observes production, developmental, and experimental activities to determine operating procedure and detail. Interviews production and engineering personnel and reads journals, reports, and other material to become familiar with product technologies and production methods. Reviews manufacturer's and trade catalogs, drawings and other data relative to operation, maintenance, and service of equipment. Studies blueprints, sketches, drawings, parts lists, specifications, mock ups, and product samples to integrate and delineate technology, operating procedure, and production sequence and detail. Organizes material and completes writing assignment according to set standards regarding order, clarity, conciseness, style, and terminology.

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Number	Job Title	Family	Job Description
10172	Technical Writer II	Document	Second of three levels of professional technical writing. The job typically requires an associate's degree and 3+ years of experience, or a bachelor's degree and 2+ years of experience, or equivalent. Under limited supervision, writes, and edits material for reports, manuals, briefs, proposals, instructions, catalogs, and related technical and administrative publications concerned with work methods and procedures, and the installation, operation, and maintenance of machinery and other equipment. Observes production, developmental, and experimental activities to determine operating procedure and detail. Organizes material and completes writing assignments according to set standards regarding order, clarity, conciseness, style, and terminology. Reviews published materials and recommends revisions or changes in scope, format, content, and methods of reproduction and binding. May maintain records and files of work and revisions. May assist in layout and selecting photographs, drawings, sketches, diagrams, and charts to illustrate material. May arrange for prepress, duplication, and distribution of material.
10173	Technical Writer III	Document	Third of three levels of professional technical writing. The job typically requires a bachelor's degree and 5+ years of experience, or equivalent. Using independent judgment and discretion, writes and edits material for reports, manuals, briefs, proposals, instructions, catalogs, and related technical and administrative publications concerned with work methods and procedures, and the installation, operation, and maintenance of machinery and other equipment. Observes production and developmental activities; interviews production and engineering personnel and reads journals, reports, and other material to become familiar with product technologies and production methods. Reviews manufacturer's and trade catalogs, drawings, blueprints, parts lists, specifications, mock ups, and product samples to integrate and delineate technology, operating procedure, and production sequence and detail. Organizes material and completes writing assignments according to set standards regarding order, clarity, conciseness, style, and terminology. Reviews published materials and recommends changes in scope, format, content, reproduction and binding. May maintain records and files of work and revisions. May assist in layout and select photographs, diagrams, charts or other illustrations. May edit, standardize, or make changes to material prepared by other writers or plant personnel. Provides work direction and training to writers with less experience.
10181	Drafting Supervisor	Document	Supervisory job with responsibility for non-exempt staff in a drafting and documentation department. The job typically requires a technical degree in drafting and 6+ years of related experience, or equivalent. Responsibilities include technical leadership of the drafting function, including CAD and management of electronic and conventional document files. Duties include assigning work, reviewing work, and providing technical instruction. Responsibilities may also extend to technical writing as a secondary function of the job.
10182	Drafting and Documentation Manager	Document	Managerial job with responsibility for all staff in a drafting and documentation department. The job typically requires a bachelor's degree in business or a technical field and 6+ years of related experience, or equivalent, with strong drafting and/or technical writing background (may rely upon subordinates to provide technical expertise in certain areas). Responsibilities include management of the drafting, CAD, engineering documentation and possibly the technical writing function and management of electronic and conventional document files. Duties include budget management, hiring, assigning and reviewing work, evaluating staff and developing, recommending, and implementing policies and procedures.
10191	Electrical/ Electronics Engineer I (Associate)	Elect	First of five levels of electrical/electronics engineering. Design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is an entry-level position and requires knowledge and understanding of basic concepts and procedures. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.

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Number	Job Title	Family	Job Description
10192	Electrical/ Electronics Engineer II (Experienced)	Elect	Second of five levels of electrical/electronics engineering. Design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.
10193	Electrical/ Electronics Engineer III (Senior)	Elect	Third of five levels of electrical/electronics engineering. Design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.
10194	Electrical/ Electronics Engineer IV (Principal)	Elect	Fourth of five levels of electrical/electronics engineering. Design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.

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Number	Job Title	Family	Job Description
10195	Electrical/ Electronics Engineer V (Senior Principal)	Elect	Fifth of five levels of electrical/electronics engineering. Design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. This is a senior principal level design position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10201	Generic Engineer I (Associate)	Generic	First of five levels of professional engineering other than civil. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. <b>Report engineers not covered elsewhere in this survey or where the job is titled based on the engineering application (design, manufacturing, etc.), but the degree field cannot readily be identified.</b> Use the application code to direct data to its proper application match. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10202	Generic Engineer II (Experienced)	Generic	Second of five levels of professional engineering other than civil. <b>Report engineers not covered elsewhere in this survey or where the job is titled based on the engineering application (design, manufacturing, etc.), but the degree field cannot readily be identified.</b> Use the application code to direct data to its proper application match. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.
10203	Generic Engineer III (Senior)	Generic	Third of five levels of professional engineering other than civil. <b>Report engineers not covered elsewhere in this survey or where the job is titled based on the engineering application (design, manufacturing, etc.), but the degree field cannot readily be identified.</b> Use the application code to direct data to its proper application match. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.
10204	Generic Engineer IV (Principal)	Generic	Fourth of five levels of professional engineering other than civil. <b>Report engineers not covered elsewhere in this survey or where the job is titled based on the engineering application (design, manufacturing, etc.), but the degree field cannot readily be identified. Use the application code to direct data to its proper application match.</b> The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.

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Number	Job Title	Family	Job Description
10205	Generic Engineer V (Senior Principal)	Generic	Fifth of five levels of professional engineering other than civil. <b>Report engineers not covered elsewhere in this survey or where the job is titled based on the engineering application (design, manufacturing, etc.), but the degree field cannot readily be identified.</b> Use the application code to direct data to its proper application match. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. This is a senior principal level position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10211	Industrial Engineer I (Associate)	Industrial	First of five levels of industrial engineering. Design, develop, test, and evaluate integrated systems for managing industrial production processes including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of processes. This is an entry-level position and requires knowledge and understanding of basic concepts and procedures. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10212	Industrial Engineer II (Experienced)	Industrial	Second of five levels of industrial engineering. Design, develop, test, and evaluate integrated systems for managing industrial production processes including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. Work primarily is involved with the development or improvement of processes. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.
10213	Industrial Engineer III (Senior)	Industrial	Third of five levels of industrial engineering. Design, develop, test, and evaluate integrated systems for managing industrial production processes including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. Work primarily is involved with the development or improvement of processes. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.
10214	Industrial Engineer IV (Principal)	Industrial	Fourth of five levels of industrial engineering. Design, develop, test, and evaluate integrated systems for managing industrial production processes including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of processes. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.

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Number	Job Title	Family	Job Description
10215	Industrial Engineer V (Senior Principal)	Industrial	Fifth of five levels of industrial engineering. Design, develop, test, and evaluate integrated systems for managing industrial production processes including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. Work primarily is involved with the development or improvement of processes. This is a senior principal level design position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10221	Mechanical Engineer I (Associate)	Mech	First of five levels of mechanical engineering. Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of such equipment as centralized heat, gas, water, and steam systems. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is an entry-level position and requires knowledge and understanding of basic concepts and procedures. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10222	Mechanical Engineer II (Experienced)	Mech	Second of five levels of mechanical engineering. Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of such equipment as centralized heat, gas, water, and steam systems. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.
10223	Mechanical Engineer III (Senior)	Mech	Third of five levels of mechanical engineering. Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of such equipment as centralized heat, gas, water, and steam systems. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.

## Job Descriptions

Number	Job Title	Family	Job Description
10224	Mechanical Engineer IV (Principal)	Mech	Fourth of five levels of mechanical engineering. Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of such equipment as centralized heat, gas, water, and steam systems. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work includes selection and testing of materials, ingredients or components that will be suitable for the product. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.
10225	Mechanical Engineer V (Senior Principal)	Mech	Fifth of five levels of mechanical engineering. Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of such equipment as centralized heat, gas, water, and steam systems. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. This is a senior principal level design position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10231	CNC Programmer I	Mfg / Process	First level of CNC programming. The job typically requires experience as a drafter, technician or machinist and specialized training with strong math skills. Working from engineered drawings and specifications and using knowledge of machine operations, develops code to control machine operation. Incumbents prepare process plans, including positioning of carriage and/or tool, rate of feed, speed of rotation, tool changes, type of tool, sequence of operations and other variables. Incumbents may work directly with machines and machine operators to verify the accuracy and safety of programs. At this level, incumbents work independently on projects of moderate complexity, but have ready access to assistance from more experienced staff or supervisors.
10232	CNC Programmer II (Advanced)	Mfg / Process	Advanced level of CNC programming. The job typically requires 3+ years of experience as a CNC Programmer. Incumbents use knowledge of machine operations to develop code to control machine operation. Incumbents prepare process plans, including positioning of carriage and/or tool, rate of feed, speed of rotation, tool changes, type of tool, sequence of operations and other variables. Incumbents may determine the suitability of a part for automation and may determine the appropriate machine assignments on the basis of efficiency and quality requirements. At this level, incumbents work with minimal supervision and may provide work training and direction to others. Assignments tend to be more complex, with unusual shapes, sizes, finishes and materials included in the mix. Short runs on valuable and complex parts may mean that there is less opportunity to use trial runs to fine-tune programs.
10235	Methods & Process Technician I (Entry)	Mfg / Process	First of three levels of methods and process technician work. The job typically requires completion of a formal technical program and no previous experience, or equivalent. Work assignments are varied, but limited in scope and complexity. Incumbents assist engineering staff with testing, prototype building, pilot plant production or other activities relating to methods or process development or improvements. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Work may include lifting, handling or maintaining equipment or operation of production equipment. Supervision is readily available and work is usually reviewed by more experienced staff. Civil Engineering and Field Service Technicians are not included.

## Job Descriptions

Number	Job Title	Family	Job Description
10236	Methods & Process Technician II (Experienced)	Mfg / Process	Second of three levels of methods and process technician work. The job typically requires completion of a formal technical program and 2+ years of work experience, or equivalent. Work assignments are varied and of moderate scope and complexity. Incumbents assist engineering staff with testing, prototype building, pilot plant production or other activities relating to methods or process development or improvements. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Work may include lifting, handling or maintaining equipment or operation of production equipment. Supervision received is limited. Civil Engineering and Field Service Technicians are not included.
10237	Methods & Process Technician III (Advanced)	Mfg / Process	Third of three levels of methods and process technician work. The job typically requires completion of a formal technical program and 5+ years of work experience, or equivalent. Work assignments are of greatest variety and complexity. Incumbents assist engineering staff with design, testing, prototype building, pilot plant production or other activities relating to methods or process development or improvements. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Work may include providing training and work direction for other technicians. Work may include lifting, handling or maintaining equipment or operation of production equipment. Supervision received is limited. Civil Engineering and Field Service Technicians are not included.
10241	Six Sigma Master Black Belt	Mfg / Process	The Six Sigma Master Blackbelt is certified by the American Society for Quality, the Institute of Industrial Engineers, or Motorola as the highest level in a hierarchy of Six Sigma certifications. The Master Blackbelt functions at the Six Sigma program level by developing key metrics and the strategic direction. The Master Blackbelt acts as an organization's Six Sigma technologist and internal consultant. The Master Black Belt leads the most complex process and quality improvement projects and trains and coaches Black Belts and Green Belts. Persons attaining this level will typically have a technical, engineering or business oriented bachelor's degree and significant process and leadership experience (typically over seven or eight years). Persons in this role may combine Six Sigma with Lean techniques.
10242	Continuous Improvement / Lean Coordinator	Mfg / Process	Professional staff job with responsibility for coordinating the implementation of lean enterprise plans oriented toward either production or office areas. The job typically requires a bachelor's degree and 2+ years of experience, or equivalent. Responsible for planning, administering and implementing assigned projects, which may cross several functional areas. Uses process tools such as Value Stream Mapping, Five S, Kanban, and poka-yoke. Typical duties include preparation and delivery of related training, measuring and recording organization performance progress, serving as a liaison to outside consultants. Typically does not supervise staff, but may provide work direction to individuals supporting a program.
10243	Manager of Lean Enterprise	Mfg / Process	Manager in charge of implementation of lean principles in an organization. The job typically requires a bachelor's degree and 4+ years of manufacturing, engineering, and/or project management experience in a lean environment, including 2+ years of supervisory or team lead experience. Work includes overseeing implementation strategy, identifying day-to-day priorities, directing and managing staff to achieve objectives, providing guidance and advice to staff and company personnel on lean principles as requested, measuring progress against goals and presenting findings to management. Typically reports to top lean enterprise executive or President/CEO.
10244	Top Management of Lean Enterprise	Mfg / Process	Executive leader of the company's lean program. The job typically requires a bachelor's degree and 8+ years of manufacturing or operations experience and 3+ years of lean and continuous improvement experience. The incumbent is responsible for identifying a lean implementation and management strategy, including a means to overcome barriers and indentifying training needed to successfully adopt lean principles. Measures and reports progress of the lean effort. Typically reports to top management, such as the President, CEO, or the top operations executive. May lead, direct and manage others in carrying out the company's lean priorities.
10251	Manufacturing / Process Engineer I (Associate)	Mfg / Process	First of five levels of manufacturing engineering. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of equipment, processes and methods. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10252	Manufacturing / Process Engineer II (Experienced)	Mfg / Process	Second of five levels of manufacturing engineering. The job typically requires a minimum of an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of equipment, processes and methods. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians.

## Job Descriptions

Number	Job Title	Family	Job Description
10253	Manufacturing / Process Engineer III (Senior)	Mfg / Process	Third of five levels of manufacturing engineering. This is a senior level position and may be a career level for many engineers. The job typically requires a minimum of an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. Work primarily is involved with the development or improvement of equipment, processes and methods. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.
10254	Manufacturing / Process Engineer IV (Principal)	Mfg / Process	Fourth of five levels of manufacturing engineering. This is a principal level position. The job typically requires a minimum of an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of equipment, processes and methods. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.
10255	Manufacturing / Process Engineer V (Senior Principal)	Mfg / Process	Fifth of five levels of manufacturing engineering. This is a senior principal level manufacturing engineering position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. The job typically requires a minimum of an engineering degree and 8+ years of experience or a master's degree and 5+ years of experience. Work primarily is involved with the development or improvement of equipment, processes and methods. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities. They have critical project technical leadership responsibility and may plan work assignments for lower level department employees.
10261	Manufacturing Engineering Manager	Mfg / Process	Manager in charge of a manufacturing engineering group. The job typically requires a bachelor's or master's degree in engineering or an engineering degree with a master's degree in business administration and significant experience (6-8 years), or equivalent. Work includes planning, supervising and coordinating all phases of manufacturing engineering. Initiates procedures, methods and equipment for development of projects. Plans and directs all phases of the manufacturing engineering program for the organization or a large division in reviewing progress and evaluating results of work. Develops production and engineering policies, practices and procedures, prepares reports for and makes appropriate recommendations to management. Originates and applies new and unique methods and procedures with considerable latitude for unreviewed action or decisions. Provides technical engineering advice and counsel to top management personnel and represents the organization in outside discussions or at professional meetings or forums.
10271	Laboratory/Test Technician I (Entry)	Quality / Test	First of three levels of laboratory/test technician work. The job typically requires completion of a formal technical program and no experience, or equivalent. Work assignments are varied, but limited in scope and complexity. Incumbents assist scientists or engineers with formulating and testing, or other activities relating to design or reliability. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Work may include lifting, handling or maintaining equipment or operation of equipment. Supervision is readily available and work is usually reviewed by more experienced staff.
10272	Laboratory/Test Technician II (Experienced)	Quality / Test	Second of three levels of laboratory/test technician work. The job typically requires completion of a formal technical program and 2+ years of experience, or equivalent. Work assignments are varied, and of moderate scope and complexity. Incumbents assist scientists or engineers with formulating and testing, or other activities relating to design or reliability. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Work may include lifting, handling or maintaining equipment or operation of equipment. Supervision received is limited.

## Job Descriptions

Number	Job Title	Family	Job Description
10273	Laboratory/Test Technician III (Advanced)	Quality / Test	Third of three levels of laboratory/test technician work. The job typically requires completion of a formal technical program and 5+ years of previous experience, or equivalent. Work assignments are of greatest variety and complexity. Incumbents assist scientists or engineers with formulating and testing, or other activities relating to design or reliability. Areas of specialization will include mechanical, chemical, electronic and others. Incumbents may use both specialized and standard computer applications in the performance of their duties. Supervision received is limited. Work may include providing training and work direction for other technicians. Work may include lifting, handling or maintaining equipment or operation of equipment.
10275	Quality / Test Engineer I (Associate)	Quality / Test	First of five levels of professional quality/test engineering. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the control of quality and reliability. Engineers design tests and specify inspection and testing methods to be executed and documented by others in a lab or production environment. Testing may be applied to raw materials, in-process materials or components, and final products. Work may include analysis of product failure to identify causes and possible remediation. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10276	Quality / Test Engineer II (Experienced)	Quality / Test	Second of five levels of professional quality/test engineering. Work primarily is involved with the control of quality and reliability. Engineers design tests and specify inspection and testing methods to be executed and documented by others in a lab or production environment. Testing may be applied to raw materials, in-process materials or components, and final products. Work may include analysis of product failure to identify causes and possible remediation. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.
10277	Quality / Test Engineer III (Senior)	Quality / Test	Third of five levels of professional quality/test engineering. Work primarily is involved with the control of quality and reliability. Engineers design tests and specify inspection and testing methods to be executed and documented by others in a lab or production environment. Testing may be applied to raw materials, in-process materials or components, and final products. Work may include analysis of product failure to identify causes and possible remediation. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.
10278	Quality / Test Engineer IV (Principal)	Quality / Test	Fourth of five levels of professional quality/test engineering. Work primarily is involved with the control of quality and reliability. Engineers design tests and specify inspection and testing methods to be executed and documented by others in a lab or production environment. Testing may be applied to raw materials, in-process materials or components, and final products. Work may include analysis of product failure to identify causes and possible remediation. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.

## Job Descriptions

Number	Job Title	Family	Job Description
10279	Quality / Test Engineer V (Senior Principal)	Quality / Test	Fifth of five levels of professional quality/test engineering. Work primarily is involved with the control of quality and reliability. Engineers design tests and specify inspection and testing methods to be executed and documented by others in a lab or production environment. Testing may be applied to raw materials, in-process materials or components, and final products. Work may include analysis of product failure to identify causes and possible remediation. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. This is a senior principal level position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10281	Sales / Applications Engineer I (Associate)	Sales	First of five levels of professional sales engineering. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work is primarily involved with facilitation of sales to customers or modifying a product or design to fit a customer need. Work includes assisting customers with the selection of products that meet their specific needs, modification of products to meet specific customer applications, and training customers in the use of products. Work may also include intervention when customers need assistance with product reliability. Work often includes travel to customer locations to participate in sales presentations, demonstrate product or otherwise assist in the sales process. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10282	Sales / Applications Engineer II (Experienced)	Sales	Second of five levels of professional sales engineering. Work is primarily involved with facilitation of sales to customers or modifying a product or design to fit a customer need. Work includes assisting customers with the selection of products that meet their specific needs, modification of products to meet specific customer applications, and training customers in the use of products. Work may also include intervention when customers need assistance with product reliability. Work often includes travel to customer locations to participate in sales presentations, demonstrate product or otherwise assist in the sales process. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.
10283	Sales / Applications Engineer III (Senior)	Sales	Third of five levels of professional sales engineering. Work is primarily involved with facilitation of sales to customers or modifying a product or design to fit a customer need. Work includes assisting customers with the selection of products that meet their specific needs, modification of products to meet specific customer applications, and training customers in the use of products. Work may also include intervention when customers need assistance with product reliability. Work often includes travel to customer locations to participate in sales presentations, demonstrate product or otherwise assist in the sales process. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.

## Job Descriptions

Number	Job Title	Family	Job Description
10284	Sales / Applications Engineer IV (Principal)	Sales	Fourth of five levels of professional sales engineering. Work is primarily involved with facilitation of sales to customers or modifying a product or design to fit a customer need. Work includes assisting customers with the selection of products that meet their specific needs, modification of products to meet specific customer applications, and training customers in the use of products. Work may also include intervention when customers need assistance with product reliability. Work often includes travel to customer locations to participate in sales presentations, demonstrate product or otherwise assist in the sales process. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.
10285	Sales / Applications Engineer V (Senior Principal)	Sales	Fifth of five levels of professional sales engineering. Work is primarily involved with facilitation of sales to customers or modifying a product or design to fit a customer need. Work includes assisting customers with the selection of products that meet their specific needs, modification of products to meet specific customer applications, and training customers in the use of products. Work may also include intervention when customers need assistance with product reliability. Work often includes travel to customer locations to participate in sales presentations, demonstrate product or otherwise assist in the sales process. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. This is a senior principal level position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10291	Software Engineer I (Associate)	Software	First of five levels of software engineering. Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. Apply principles and techniques of computer science, engineering, and mathematical analysis. The job typically requires an engineering degree and less than 1 year of experience, or equivalent. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is an entry-level position and requires knowledge and understanding of basic concepts and procedures. These engineers use established policies and procedures to complete work assignments. Work is somewhat routine with detailed instructions. Work is performed under close supervision. Engineers may be assigned an element of a project or well-defined tasks.
10292	Software Engineer II (Experienced)	Software	Second of five levels of software engineering. Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. Apply principles and techniques of computer science, engineering, and mathematical analysis. The job typically requires an engineering degree and 1+ years of experience or a master's degree and less than 1 year of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. These engineers appropriately apply engineering principles and concepts. They are able to draw solutions from both formal training and experience. Work is varied in nature. Under general direction, they plan and perform engineering duties for part of a major project or for projects of moderate complexity. They may provide work direction to technicians and less experienced engineers.

## Job Descriptions

Number	Job Title	Family	Job Description
10293	Software Engineer III (Senior)	Software	Third of five levels of software engineering. Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. Apply principles and techniques of computer science, engineering, and mathematical analysis. The job typically requires an engineering degree and 3+ years of experience or a master's degree and 1+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a senior level position and it may be a career level for many engineers. These engineers demonstrate creativity and ingenuity in applying engineering principles and practices. They are able to draw solutions from a wider range of experience. They are generally more proficient at solving problems in a timely manner. Assignments are broad in nature. They work under minimal supervision and are responsible for defining technical approaches to projects. They may act as lead on some projects and guide lower level engineers and technicians.
10294	Software Engineer IV (Principal)	Software	Fourth of five levels of software engineering. Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. Apply principles and techniques of computer science, engineering, and mathematical analysis. The job typically requires an engineering degree and 5+ years of experience or a master's degree and 3+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. Work may include responding to a customer request for a particular product or design. The typical cycle includes conceptualizing, developing prototypes, testing and perfecting designs. This is a principal level position. These engineers have extensive and broad knowledge in the field and may have knowledge of other fields. They are able to adapt methods to solve problems. They use creativity to resolve complex issues. Work is stated in terms of objectives, requiring project planning and judgment. They may have overall project responsibility. They act as technical authority in area of specialty on assigned projects. They will act as lead on most assigned projects and assist lower level engineers and technicians.
10295	Software Engineer V (Senior Principal)	Software	Fifth of five levels of software engineering. Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. Apply principles and techniques of computer science, engineering, and mathematical analysis. The job typically requires a bachelor's of science degree and 8+ years of experience or a master's degree and 5+ years of experience. Work primarily is involved with the development or improvement of actual products or designs. Work may include creation of previously non-existent products or modification of existing products, including product line extensions. This is a senior principal level design position and it is the top non-supervisory level of engineering in an industry requiring significant technical knowledge. These engineers have extensive breadth and depth of knowledge in their field of specialization and working knowledge of other fields. They are capable of clearly defining appropriate technical approaches and solutions to the most mission critical challenges. They are able to define critical project criteria to ensure project completion and have demonstrated leadership skills and mastery of financial principles. Work is stated in terms of objectives requiring project planning and judgment. They act as one of the foremost technical authorities in the area of specialty. They are responsible for all aspects of projects including financial budgets.
10301	Engineering Supervisor	Eng Mgmt	Supervises the daily operations and activities of a segment of an engineering department. Requires a BS degree in engineering and 8+ years of progressive experience, including project management experience. Responsible for formalizing work plans and directing their implementation. Assigns work to meet overall project deadlines. Evaluates progress on projects and suggests changes. Interprets policies and procedures and ensures they are followed within the department. Responsible for the training and development of subordinate staff. Responsible for financial budgets at the department level. Directly supervises engineers and technicians in the department, with the authority to hire/terminate/promote and make compensation decisions for subordinate staff. Normally possesses and applies comprehensive knowledge in field of specialization. Knowledge significantly crosses engineering fields. Capable of clearly defining organizational approaches to complex and/or large projects.

## Job Descriptions

Number	Job Title	Family	Job Description
10305	Director of Engineering	Eng Mgmt	Director level engineering job. The job typically requires a degree in engineering and 10+ years of experience, including management experience. Responsibilities include planning, analyzing and evaluating all or several phases of engineering programs, plans and procedures. Reviews recommendations for designs and methods as well as equipment purchases. Coordinates the creation, development, design and improvement of corporate products to conform with established program objectives. Provides engineering consultation as requested. Works with top management to meet organizational objectives for all engineering activities. Directs the appropriate staffing of the engineering department. Controls budgets for engineering activities.
10311	Vice President of Engineering	Eng Mgmt	Executive level engineering job. The job typically requires a degree in engineering and 12+ years of experience, including management experience. Responsible to plan, analyze and evaluate all phases of engineering programs, plans and procedures. Reviews recommendations for designs and methods as well as equipment purchases. Coordinates the creation, development, design and improvement of corporate products to conform with established program objectives. Provides engineering consultation as requested. Works with top management to meet organizational objectives for all engineering activities. Directs the appropriate staffing of the engineering department. Controls budgets for all engineering activities.
11101	Chief Information Officer (CIO)	IT Mgmt	Responsible for directing all information systems activities within the organizational unit. This job typically requires a bachelor's degree in computer science and 12+ years of experience, or equivalent. Leads strategic planning for information technology for the entire organization. Establishes policies relating to information technology development and use. Develops recommendations regarding selection and retention of hardware and software. Establishes budgetary and performance controls. Directs maintenance of systems documentation. Provides technical assistance to other functions in the organization as requested. Participates in cabinet level strategic planning.
11103	IT Director	IT Mgmt	This is the top information technology job where the function is staffed at a director level and the job is usually not considered part of the executive cabinet. This job typically requires a bachelor's degree in computer science and 10+ years of experience, or equivalent. Responsibilities include systems analysis, programming, and operations. Develops policies, procedures, technical standards, methods, and schedules. Oversees the strategic relationship between information technology and other functions within the organization. Evaluates options for improving IT performance and reliability and reports to management on information technology plans, projects, performance and related matters. In smaller and mid-sized organizations this may be the top IT position reporting to a CEO or COO.
11105	IT Manager (Single Location)	IT Mgmt	Plans, directs and coordinates Information Technology activities for a single location such as a branch or division. This job typically requires a bachelor's degree in computer science and 6+ years of experience, or equivalent. Directs daily operations of the department and coordinates project activities with other departments. Evaluates project proposals and feasibility. Develops and interprets organizational goals, policies, and procedures. Directs training, performance standard setting and evaluation of work of subordinates. Participates in staffing decisions. Assigns or schedules work to meet priorities and goals. Works with department heads, managers, supervisors, vendors, and others to determine computing needs and system requirements. Prepares/recommends, monitors, and adjusts operational budget. Prepares and reviews operational reports or project progress reports.
11106	IT Manager (Corporate Organizations)	IT Mgmt	Plans, directs and coordinates Information Technology activities for the organization. This job typically requires a bachelor's degree in computer science and 8+ years of experience, or equivalent. Directs daily operations of department and coordinates project activities with other departments. Evaluates project proposals and feasibility. Develops and interprets organizational goals, policies, and procedures. Directs staffing decisions, training, performance standard setting and evaluation of work of subordinates. Assigns or schedules work to meet priorities and goals. Works with department heads, managers, supervisors, vendors, and others to determine computing needs and system requirements. Manages department budget. Prepares and reviews operational reports or project progress reports.
11108	IT Project Manager	IT Mgmt	Responsible for running projects/programs from design and development to production. This job typically requires a bachelor's degree in computer science and 5+ years of experience, or equivalent. Plans, executes and finalizes projects according to deadlines and budgets. Creates an information technology project plan that communicates and monitors tasks, milestone dates, status and resource allocation. Coordinates delivery of development and production releases that meet standards. Assists team in design and development tasks. Responsible for overseeing quality control of the project. Identifies and resolves issues and conflicts within the project team. Develops and delivers progress reports, proposals, requirements documentation, and presentations.

## Job Descriptions

Number	Job Title	Family	Job Description
11111	Business Analyst I (Entry)	Business	First of four levels of professional Business Analyst. At this level work primarily involves work on projects managed by others. Responsible for determining and documenting business needs and requirements. Under supervision, designs, tests, and implements new systems and modifies existing systems to meet business needs. Incumbents have a blend of business and technology background. The job typically requires a bachelor's degree and 1 year of related experience, or equivalent.
11112	Business Analyst II (Intermediate)	Business	Second of four levels of Business Analyst. Responsible for determining and documenting business needs and requirements. Under general supervision, designs, tests, and implements new systems and modifies existing systems to meet business needs. Identifies business processes that can be improved through technology and builds solutions to do so. Incumbents have a strong blend of business and technology background. Typically requires bachelor's degree and 3+ years of experience, or equivalent.
11113	Business Analyst III (Advanced)	Business	Third of four levels of Business Analyst. Responsible for determining and documenting business needs and requirements. Under managerial direction, designs, tests, and implements new systems and modifies existing systems to meet business needs. Identifies business process that can be improved through technology and builds solutions to do so. Manages the more complex projects to ensure effective and timely completion. Incumbents have a strong blend of business and technology background. Typically requires bachelor's degree and 5+ years of experience, or equivalent.
11114	Business Analyst IV (Principal)	Business	Fourth of four levels of Business Analyst. Responsible for determining and documenting business needs and requirements. Under managerial guidance, designs, tests, and implements new systems and modifies existing systems to meet business needs. Identifies business process that can be improved through technology and builds solutions to do so. Manages the most complex projects to ensure effective and timely completion. Incumbents have a strong blend of business and technology background. Typically requires bachelor's degree and 8+ years of experience, or equivalent.
11121	ERP Business Analyst I (Entry)	Business	First of four levels of professional ERP Business Analyst. Using subject matter expertise, plans and performs analysis of major company activities and/or functions and guides the subsequent design, and implementation or improvement of an ERP system. At this level work is primarily subject to senior professional leadership. The job typically requires a bachelor's degree and 1+ years of related experience, or equivalent. Performs procedures to analyze information, methods, systems and procedures to determine the most useful business solutions to the company. Studies and tests interaction between systems to take advantage of new and more effective ways of providing needed information. Will interpret analysis and make recommendations as formal proposals and/or presentations to senior executives. <b>Report the primary ERP/CRM product vendor.</b>
11122	ERP Business Analyst II (Experienced)	Business	Second of four levels of professional ERP Business Analyst; senior level technical expert. Using subject matter expertise, plans and performs analysis of major company activities and/or functions and guides the subsequent design, and implementation or improvement of an ERP system. The job typically requires a bachelor's degree and 3+ years of related experience, or equivalent. Under general direction, plans and performs analysis of major company activities and /or functions and guides the subsequent design and implementation or improvement of existing ERP systems. Performs non-standard procedures to analyze information, methods, systems and procedures to determine the most useful business solutions. Will analyze, interpret and make recommendations to senior IT managers. Usually trains and guides the work of less experienced analysts, but this function is incidental to specific projects. Is competent to work in most phases of business analysis. <b>Report the primary ERP/CRM product vendor.</b>
11123	ERP Business Analyst III (Advanced)	Business	Third of four levels of professional ERP Business Analyst. Using subject matter expertise, plans and performs analysis of major company activities and/or functions and guides the subsequent design, and implementation or improvement of an existing ERP system. The job typically requires a bachelor's degree and 5+ years of related experience, or equivalent. Using advanced concepts and techniques analyzes the information needs of the business unit in order to determine the most useful ERP business solutions. Studies and tests interaction between systems to take advantage of new and more effective ways of providing needed information. Will analyze, interpret and make recommendations as formal proposals and/or presentations to senior executives. Usually directs and guides the work of less experienced analysts; may serve as a team leader. Fully competent to work at the highest level in all phases of ERP business analysis. Exclude systems auditors or systems analysts. <b>Report the primary ERP/CRM product vendor.</b>

## Job Descriptions

Number	Job Title	Family	Job Description
11124	ERP Business Analyst IV (Principal)	Business	Fourth of four levels of professional ERP Business Analyst. Using subject matter expertise, plans and performs analysis of major company activities and/or functions and guides the subsequent design, and implementation or improvement of an existing ERP system; highest level technical expert without supervisory responsibility. The job typically requires a bachelor's degree and 8+ years of related experience, or equivalent. Exclude supervisors with permanent responsibility of a particular department. Using advanced concepts and techniques analyzes the information needs of the business unit in order to determine the most useful ERP business solutions. Studies and tests interaction between systems to take advantage of new and more effective ways of providing needed information. Will analyze, interpret and make recommendations as formal proposals and/or presentations to senior executives. Usually directs and guides the work of less experienced analysts; typically serves as a team leader. Fully competent to work at the highest level in all phases of ERP business analysis. Exclude systems auditors or systems analysts. <b>Report the primary ERP/CRM product vendor.</b>
11131	ERP Programming Analyst I (Entry)	Business	First of four levels of professional programming/analyst focused on implementing and modifying ERP applications. The job typically requires a bachelor's degree and no related experience, or equivalent. Under direct supervision, assists in determining the relevance of computer programs relative to specific administrative, scientific, and engineering functions or problems. Assists senior-level analysts in preparing detailed specifications from which programs will be written. Will also assist in the analysis and revision of existing system logic difficulties and documentation, as necessary. Carries-out progressively more difficult assignments involving the compiling, summarizing, and analysis of data concerning the function or problem being studied. May prepare flow charts to outline the existing process or the proposed solution to the problem. <b>Report the primary ERP/CRM product vendor.</b>
11132	ERP Programming Analyst II (Experienced)	Business	Second of four levels of professional programming/analyst focused on implementing and modifying ERP applications. The job typically requires a bachelor's degree and 2+ years of related experience, or equivalent. Under general supervision, studies specific administrative, scientific, or engineering functions to determine, define, and formulate the applicability of new or modified application programs. Identifies all aspects of the assigned problem and evaluates user requirements in terms of the capabilities of the available hardware and software. Develops proper documentation that outlines the logical steps to be followed in solving the problem and prepares systems specifications including input and output formats. Able to work in most aspects of application systems analysis in accordance with acceptable practices standards. <b>Report the primary ERP/CRM product vendor.</b>
11133	ERP Programming Analyst III (Advanced)	Business	Third of four levels of professional programming/analyst focused on implementing and modifying ERP applications. The job typically requires a bachelor's degree and 5+ years of related experience, or equivalent. Under general direction, plans and performs the analysis of major company activities and guides the subsequent design and implementation of systems for the application of electronic data processing or for the improvement of existing data processing applications. Job is concerned primarily with the broad aspects of data processing systems with the objective of utilizing available personnel resources and computer hardware and software to provide the information that is most useful to the company in the most efficient manner. Job is concerned with the interaction between systems, not only to avoid redundancies in storage and processing, but also to take advantage of new and more effective ways of providing needed information. May occasionally train and guide the work of less experienced analysts, but this function is incidental to specific projects. <b>Report the primary ERP/CRM product vendor.</b>
11134	ERP Programming Analyst IV (Principal)	Business	Fourth of four levels of professional programming/analyst focused on implementing and modifying ERP applications; highest level technical expert without supervisory responsibility. The job typically requires a bachelor's degree and 8+ years of related experience, or equivalent. Formulates, organizes, and provides technical direction to major projects involving all phases of application systems analysis. Will formulate, design, and guide systems analysis implementation projects while taking the capacity and limitation of the equipment, operating time, and form of desired results into consideration. Prepares detailed specifications from which programs will be written. Analyzes and revises existing system logic difficulties as necessary. Has full technical knowledge of all systems analysis activities, which may include instructing, directing, and checking the work of other systems analysis personnel. May also provide quality assurance reviews. Exclude supervisors with permanent responsibility of a particular department. <b>Report the primary ERP/CRM product vendor.</b>

## Job Descriptions

Number	Job Title	Family	Job Description
11135	ERP Project/Programming Analyst Manager	Business	Manages employees engaged in the analysis of administrative, scientific, or engineering functions and the subsequent implementing and modifying ERP applications to perform these functions. The job typically requires a bachelor's degree and 8+ years of related experience, or equivalent. Responsible for scheduling, assigning, and coordinating the work of subordinate systems analysts. Also responsible for coordinating and maintaining liaison with the various operating units affected by systems studies as well as verifying the quality of studies performed by subordinates and for directing their training in techniques of systems analysis. May work with other technical personnel in establishing time schedules and priorities for development of data processing applications. May have responsibility for all or only a part of the ERP systems analysis function. <b>Report the primary ERP/CRM product vendor.</b>
11139	Data Warehousing Administrator	Database	Responsible for administration of data warehousing. Monitors hardware and software for performance and reliability. Coordinates new data integration in order to provide timely and accurate integration. Works with data sources to ensure proper configuration and compatibility. Coordinates with network engineers, systems analysts and programmers to resolve problems as they arise. The job requires a technical degree and 3+ years of experience, or equivalent.
11141	Data Entry Supervisor	Database	Manages the data entry and control departments, performs supervisory and administrative duties related to data entry. Plans and assigns work to employees and handles employee personnel actions, including hiring, discipline, performance evaluation and training. Develops procedures to make data entry efficient and effective. Monitors performance of equipment and makes recommendations for new equipment of upgrades of existing equipment. Ensures quality and accuracy of data entry work. Assists in preparation and monitoring of department budget.
11143	Data Security Analyst	Database	Plans, coordinates, and implements security measures to safeguard information in computer files. Works with other company staff to identify and plan for data security for data, software, hardware, telecommunications and computer installations. Develops security policies and procedures. Recommends and coordinates installation of security software and hardware. Coordinates, documents and reports on investigations of possible security violations. Typically requires five years of combined post high school education and experience.
11144	Data Security Manager	Database	Manages the implementation of policies, programs, and procedures to protect information systems from inadvertent or intentional modification or destruction. The job typically requires a four-year degree and 5+ years of experience. Develops and communicates information security standards and guidelines for data and intellectual security. Provides reports regarding effectiveness of network and data security. Recommends new procedures and technologies. Manages and coordinates compliance for required industry audits. Manages and monitors intrusion detection mechanisms, firewall logs, and other relevant reports to avoid computer hacking and other unauthorized and suspicious activity. Ensures development and maintenance of firewalls.
11151	Database Administrator	Database	Professional database administrator with responsibility to coordinate changes to computer databases and test and implement the database applying knowledge of database management systems. The job typically requires a computer science bachelor's degree and 3+ years of experience, or equivalent. Vendor certification in the technology may be required. May plan, coordinate, and implement security measures to safeguard computer databases. Writes logical and physical data base descriptions including location, space, access method, and security. Codes data base descriptions and specifies identifiers of data base to management system or directs others in coding descriptions. Tests, corrects errors, and modifies changes to programs or to data base. Develops data model describing data elements and how they are used, following procedures using pen, template or computer software. Establishes and calculates optimum values for data base parameters, using manuals and calculator. Directs programmers and analysts to make changes to data base management system. Selects and enters codes to monitor data base performance and to create production data base. Trains users and answers questions. Specifies user and user access levels for each segment of data base. Include professionals with technical expertise in MS SQL Server, Oracle or other vendor systems.
11152	Database Analyst II (Experienced)	Database	Designs or modifies database applications to specifications provided by higher-level staff. The job typically requires a bachelor's degree and 2+ years of related experience, or equivalent. Tests, corrects, monitors and updates developed applications. Evaluates database performance. Tunes and reorganizes databases as needed. Sets up back-up and recovery procedures for databases. Controls access to data in physical database designs for both privacy and security. Include professionals with technical expertise in MS SQL Server, Oracle or other vendor systems.

## Job Descriptions

Number	Job Title	Family	Job Description
11153	Database Analyst III (Advanced)	Database	Senior level position involved in designing or redesigning databases as business needs change. The job typically requires a bachelor's degree and 5+ years of related experience, or equivalent. Designs, codes, tests and executes physical databases from logical designs. Evaluates database quality. Tunes and reorganizes databases as needed. Recommends ways the new database management systems can be implemented. Include professionals with technical expertise in MS SQL Server, Oracle or other vendor systems.
11154	Database Analyst IV (Principal)	Database	Highest level technical expert without supervisory responsibility. The job typically requires a bachelor's degree and 8+ years of related experience, or equivalent. Evaluates and designs existing or proposed systems to structure and access databases. Analyzes database requirements of the user department, applications programming and operations. Provides project leadership within a functional database area of specialization. Typically performs highly technical and specialized functions integral to the development of applications. Supports the development and production database environments. Include professionals with technical expertise in MS SQL Server, Oracle or other vendor systems.
11155	Database Manager	Database	Manages the database staff in the planning, design, development and implementation of integrated databases. The job typically requires a bachelor's degree and 8+ years of related experience, or equivalent. Formulated policy/procedures affecting database management and projects long-range requirements for database administration in conjunction with other information systems areas. Provides support and information to efficiently execute database administration and processing and ensure database files will support growth and access demands. Include managers with technical expertise in MS SQL Server, Oracle or other vendor systems.
11171	Human Resources Information Systems Analyst I	HRIS	Administers the HRIS system on a daily basis. The job typically requires a bachelor's degree and 1+ years of related experience, or equivalent. Assists system users and performs system maintenance. Develops custom enhancements to existing systems to ensure and improve departmental efficiency. Coordinates operations and acts as liaison with Corporate IS to oversee the continuous processing, handling and storage of human resources data. Implements directed HRIS standards to ensure integrity of HRIS data.
11172	Human Resources Information Systems Analyst II	HRIS	Coordinates systems planning, development and implementation for HRIS. The job typically requires a bachelor's degree and 4+ years of related experience, or equivalent. Duties include identifying user needs and monitoring progress toward objectives. Defines system maintenance requirements and coordinates enhancements to existing systems to ensure and improve departmental efficiency. Coordinates operations with Corporate IS and supervises the continuous processing, handling and storage of human resources data. May introduce HRIS system upgrades to human resources department employee. Implements directed HRIS standards and ensures integrity of HRIS data.
11173	Human Resources Information Systems Manager	HRIS	Responsible for the organization's HRIS function. The job typically requires a bachelor's degree and 5+ years of related experience, or equivalent. Identifies user needs and monitors progress toward objectives. Defines system maintenance requirements and authorizes enhancements to existing systems to improve departmental efficiency. Is the main liaison with all departments regarding HRIS issues. Works with corporate IS to manage the continuous processing, handling and storage of human resources data. Ensures that HRIS upgrade information is communicated to human resources department employees. Established HRIS standards.
11177	Computer Technician I (Entry)	Maint	First of three levels of computer technician work. The job typically requires completion of a formal technical program and no previous experience, or equivalent. Work assignments are varied, but limited in scope and complexity. Supervision is readily available and work is usually reviewed by more experienced staff. Incumbents assist with setup, repair and cabling activities relating to computer and network hardware and software. Incumbents may replace internal boards or components, install drivers, customize system settings, attach peripheral equipment and troubleshoot user problems. Work may involve multiple platforms. Work includes lifting, handling or maintaining equipment.
11178	Computer Technician II (Experienced)	Maint	Second of three levels of computer technician work. The job typically requires a two-year degree and 2+ years of experience, or equivalent. Work assignments are varied and of greater scope and complexity, often involving testing and troubleshooting to identify problems. Under limited supervision, incumbents analyze, troubleshoot, repair, and maintain the computer system, terminal network, and peripheral equipment relating to computer and network hardware and software. Performs routine preventative maintenance on all computer system equipment. Utilizes diagnostic programs and electronic test equipment. Performs analysis and administrative tasks in the planning, design and installation of new and existing personal computer-based applications. Troubleshoots and modifies PC software applications. May work on complex applications and be involved in making recommendations or decisions to meet overall departmental or organizational needs.

## Job Descriptions

Number	Job Title	Family	Job Description
11179	Computer Technician III (Advanced)	Maint	Third of three levels of computer technician work. The job typically requires a two-year degree and 4+ years of experience, or equivalent. Incumbent analyzes, troubleshoots, repairs, and maintains the computer system, terminal network, and peripheral equipment. Performs more advanced maintenance on all computer system equipment. Utilizes diagnostic programs and electronic test equipment. Will isolate, resolve and follow-up with end-users to resolve technical problems of a high level of complexity. Performs analysis and administrative tasks in the planning, design and installation of new and existing personal computer-based applications. Troubleshoots and modifies PC software applications. May work on complex applications and be involved in making recommendations or decisions to meet overall departmental or organizational needs. This level may provide training and work direction to less experienced technicians.
11181	Network Engineer I (Entry)	Network	First of three levels of network technical support. Under supervision provides technical maintenance and recovery support of the firm's local or wide area networks. Will use a variety of testing tools and techniques to troubleshoot and resolve complex technical problems associated with the system's hardware and software. Will interface with vendors and maintenance providers to service and maintain the system, will implement necessary measures to limit the system's downtime, will provide technical support to optimize system performance. Performs network analysis and capacity planning. Develops and recommends approaches to network growth and enhancements. Develops processes and procedures for network operations. Provides network performance monitoring and analysis. Supports installation and maintenance of server hardware and software. Assists in maintenance of all data center equipment. The job requires a two-year technical degree, or equivalent.
11182	Network Engineer II (Experienced)	Network	Second of three levels of network technical support. Leads network projects by recommending solutions to network strategy and security issues. Develops detailed network specifications. Performs network analysis and capacity planning. Develops and recommends approaches to network growth and enhancements. Develops processes and procedures for network operations. Provides network performance monitoring and analysis. Supports installation and maintenance of server hardware and software. Assists in maintenance of all data center equipment. The job requires a two-year technical degree and 2+ years experience, or equivalent.
11183	Network Engineer III (Advanced)	Network	Third of three levels of network technical support. Responsible for the technical design, configuration, and implementation of local and wide area network solutions between multiple platforms including ongoing technical support to remote area networks, Internet and EDI communications. Has thorough knowledge of multiprotocol systems and extensive implementation experience with multi-vendor network systems. Is responsible for troubleshooting network usage, workstations and computer peripherals. Will develop and implement policies and standards and ensures adherence to security procedures. The job requires a two-year technical degree 5+ years experience, or equivalent.
11185	Systems Administrator	Network	Responsible for the installation/configuration, operation and maintenance of systems hardware and software and related infrastructure. Typically requires a bachelor's degree in computer science or a related field and 3+ years experience, or equivalent. Insures that system hardware, operating systems, software systems, and related operating procedures meet organizational needs. Researches and recommends improvements to the operating system. May perform security monitoring.
11187	Unix Administrator, Senior	Network	Responsible for the installation/configuration, operation and maintenance of systems hardware and software and related infrastructure. Typically requires a bachelor's degree in computer science or a related field and 5+ years of experience, or equivalent. Coordinates with network engineers to implement database administration and business application programs. Implements system policies and procedures that support the processing environment. Responsibilities include project development support, systems maintenance and upgrades, as well as trouble-shooting.
11188	Network Administrator	Network	Under general direction, is responsible for the technical design, configuration, and implementation of local and wide area network solutions between multiple platforms including ongoing technical support to remote area networks, Internet, and EDI communications. Job typically requires a bachelor's of arts degree, and incumbents usually have special certification such as CNE and 5+ years of experience, or equivalent. Has thorough knowledge of multi-protocol systems and extensive implementation experience with multi-vendor network systems. Is responsible for troubleshooting network usage, workstations, and computer peripherals. Will develop and implement policies and standards and ensures adherence to security procedures.
11189	LAN Administrator/Mgr. (Single Facility)	Network	Directs and coordinates local area network activities within a single facility company. Designs, installs, and maintains network hardware, software and telecommunications services. Develops policies and procedures related to the network. Trains users on software and hardware issues. Works with internal customers to report and resolve problems. Researches and evaluates new technologies. Negotiates contracts with suppliers.

## Job Descriptions

Number	Job Title	Family	Job Description
11190	WAN Administrator/Manager	Network	Provides support and management of local and wide area networks within a company. Monitors the daily activity on the network, ensuring that company resources are utilized effectively. Tests programs and protocols on the network to ensure that all components are working within reasonable limits. Performs a variety of maintenance, evaluation, installation and training tasks to ensure network performance meets company and user requirements. Upgrades existing software, including implementing fixes that may be periodically released.
11191	LAN/WAN Analyst II (Experienced)	Network	Responsible for maintaining LAN hardware and software to ensure effective performance. Installs, configures and supports a company's LAN, WAN, and Internet system or a segment of a network system. Performs system evaluations, upgrades and enhancements, and installations. Configures and monitors system components, performs system diagnostics and preventive maintenance. May coordinate and implement network security measures. Typically requires 2+ years of experience, or equivalent.
11192	LAN/WAN Analyst III (Advanced)	Network	Responsible for maintaining LAN hardware and software to ensure effective performance. Installs, configures and supports a company's LAN, WAN, and Internet system or a segment of a network system. Performs the more complex system evaluations, upgrades and enhancements, and installations. Configures and monitors system components, performs system diagnostics and preventive maintenance. May supervise or provide work direction to other network support staff. May coordinate and implement network security measures. Typically requires 5+ years of experience, or equivalent.
11195	Computer Operator I (Entry)	Oper Systems	Entry-level position in the area of computer operations. The job typically requires reading, communication and math skills commensurate with a high school diploma or GED and less than 1 year of computer operator training and experience, or equivalent. Incumbents perform diversified duties involving the operation of a computer and auxiliary equipment such as high-speed printer and peripheral machines. Working under close supervision and following standard procedures, loads and executes jobs/programs and monitors and controls a computer console to automatically process and store data. Incumbents perform scheduled backups and maintain computer logs relative to machine performance and utilization. Incumbents at this level require frequent assistance with problem solving.
11196	Computer Operator II (Experienced)	Oper Systems	Experienced level position in the area of computer operations. The job typically requires reading, communication and math skills commensurate with a high school diploma or GED and 2+ years of experience in the operation of computer devices. Incumbents perform diversified duties involving the operation of a computer and auxiliary equipment such as high-speed printers and peripheral machines. Working under limited supervision and following standard procedures, loads and executes jobs/programs and monitors and controls a computer console to automatically process and store data. Incumbents perform scheduled backups and maintain computer logs relative to machine performance and utilization. Incumbents at this level are able to solve most problems without assistance.
11197	Computer Operator III (Advanced)	Oper Systems	Advanced level position in the area of computer operations. The job typically requires reading, communication and math skills commensurate with a high school diploma or GED and 4+ years of experience in the operation of computer devices. Under minimal supervision, loads and executes jobs/programs and monitors and controls a computer console to automatically process and store data. Incumbents perform scheduled backups and maintain computer logs relative to machine performance and utilization. Incumbents at this level are competent to work on all phases of computer operations and may provide troubleshooting assistance and work direction to others.
11201	Computer Operations Supervisor	Oper Systems	Supervises operations staff to meet data processing operations. Typically requires training beyond high school and 5+ years of experience, or equivalent. Administers computer operations department policies and procedures. Supervises, instructs, directs and checks the work activities of computer personnel. May be responsible for staffing decisions. Requires technical knowledge of computer operations.
11202	Computer Operations Manager	Oper Systems	Plans, directs, and manages the daily operations of a computer operations department. Typically technical training and 8+ years of experience, or equivalent. Responsible for the effective operation of computers and peripheral equipment and for managing and setting priorities for use of computer equipment. Generally manages a group of computer operators. May be responsible for the security of network systems and infrastructure.

## Job Descriptions

Number	Job Title	Family	Job Description
11205	Operating Systems Programmer I (Entry)	Oper Systems	First of three levels of professional operating systems programmer. Researches, analyzes, installs and maintains systems software on the system server. Ensures that software is performing at optimum efficiency. Plans and performs installation and maintenance of software. Plans, documents, tests and installs software changes and assists with hardware changes if necessary. Works with both internal customers and outside hardware/software vendors. Typically requires a bachelor's degree in computer science or related field and less than one year of experience in systems programming, or equivalent.
11206	Operating Systems Programmer II (Experienced)	Oper Systems	Second of three levels of operating systems programmer. Researches, analyzes, installs and maintains systems software on the system server. Ensures that software is performing at optimum efficiency. Plans and performs installation and maintenance of software. Plans, documents, tests and installs software changes and assists with hardware changes if necessary. Works with both internal customers and outside hardware/software vendors. Typically requires a bachelor's degree in computer science or related field and 2+ years of experience in systems programming, or equivalent.
11207	Operating Systems Programmer III (Advanced)	Oper Systems	Third of three levels of professional operating systems programmer. Applies a comprehensive body of knowledge to all phases of operating systems programming of a high degree of complexity and scope. Is usually responsible for formulating specifications for applications dealing with the complete operating system, including: Sophisticated file maintenance routines, large telecommunications networks, computer accounting and advanced mathematical/scientific software programs. Responsibilities typically include program design, coding, testing, debugging and documentation. May plan the technical schedule and may oversee the work of a group of operating systems programmers. May carry out or participate in feasibility studies relative to new hardware or software systems and the implementation of such systems. May have quality assurance review and/or new and existing software product evaluation responsibilities. Typically requires a bachelor's degree in computer science or related field and 5+ years of experience in systems programming, or equivalent.
11208	Operating Systems Programming Supervisor	Oper Systems	Supervises activities of operating systems computer programmers and related staff. Supervises development, installation, and maintenance of computer operating software. Responsible for cost and time estimates, feasibility studies, and design/implementation new systems or modification of existing systems and programs. Typically requires bachelor's degree with 6+ years of experience.
11209	Manager, Computer Operations and Operating Systems Programming	Oper Systems	Managerial job with combined operations and operating system responsibilities. Responsible for all equipment operations and related aspects of data processing, plus the operating systems programming function, but not responsible for systems analysis or applications programming. Subordinate functions may include computer operations, data entry, data control and scheduling. May have subordinate supervisors in charge of any or all of these functions. Supervises (either directly or through a subordinate supervisor) the development, modification and maintenance of systems software (general-purpose programs such as control systems, compilers, utility routines, etc.). Provides technical support to applications programmers in the use and the effective interface with the operating system. May be responsible for or participate in the evaluation of new computer hardware and software systems to determine feasibility of installation.
11211	Application Developer / Programmer I (Entry)	Applications Developer/Programmer	First of four levels of professional application development. Designs and develops computer programs that automate specific business processes. Responsible for handling all developmental aspects of a project, including developing new software systems and modifying existing systems. Typically requires bachelors degree and less than one year of experience. Consults with users to analyze and understand functions to be automated and client needs. Analyzes and estimates feasibility, cost, time, compatibility with other systems, and computer capabilities. Converts designs and specifications into computer code, and then into programs. Monitors performance of programs after implementation.
11212	Application Developer / Programmer II (Experienced)	Applications Developer/Programmer	Second of four levels of professional application development. Designs and develops computer programs that automate specific business processes. Responsible for handling all developmental aspects of a project, including developing new software systems and modifying existing systems. Typically requires bachelors degree and 3+ years of experience. Consults with users to analyze and understand functions to be automated and client needs. Analyzes and estimates feasibility, cost, time, compatibility with other systems, and computer capabilities. Converts designs and specifications into computer code, and then into programs. Monitors performance of programs after implementation.

## Job Descriptions

Number	Job Title	Family	Job Description
11213	Application Developer / Programmer III (Advanced)	Applications Developer/Programmer	Third of four levels of professional application development. Designs and develops computer programs that automate specific business processes. Responsible for handling all developmental aspects of more complex projects, including developing new software systems and modifying existing systems. Typically requires bachelors degree and 5+ years of experience. Consults with users to analyze and understand functions to be automated and client needs. Analyzes and estimates feasibility, cost, time, compatibility with other systems, and computer capabilities. Converts designs and specifications into computer code, and then into programs. Monitors performance of programs after implementation.
11214	Application Developer / Programmer IV (Principal)	Applications Developer/Programmer	Fourth of four levels of professional application development. Leads the most complex applications development projects and determines data processing requirements. Allocates resources and determines timeframe of deliverables. Provides guidance and technical expertise to other application developers and members of the development team. Leads and coordinates activities of project staff and monitors activities to ensure progress against schedule. Typically requires bachelor's degree and 8+ years of experience.
11215	Application Developer / Programmer Manager	Applications Developer/Programmer	Plans, implements and coordinates application developing/programming projects. Works with user requests for application development and determines data processing requirements, then allocates resources and determines time frames. Typically requires a bachelor's degree in a computer-related field and 8+ years of experience. Determines programming team resources based on project needs. Supervises programmers. Monitors process of programming against commitments. Provides technical expertise to the programming team and others in the organization. Typically reports to a manager or department head.
11221	Application Programming Analyst I (Entry)	Systems Analysis / Programming	First of four levels of professional programming/analyst. At this level the primary focus is programming. The job typically requires a bachelor's degree and no related experience, or equivalent. Under direct supervision, assists in determining the relevance of computer programs relative to specific administrative, scientific, and engineering functions or problems. Assists senior-level analysts in preparing detailed specifications from which programs will be written. Will also assist in the analysis and revision of existing system logic difficulties and documentation, as necessary. Carries-out progressively more difficult assignments involving the compiling, summarizing, and analysis of data concerning the function or problem being studied. May prepare flow charts to outline the existing process or the proposed solution to the problem.
11222	Application Programming Analyst II (Experienced)	Systems Analysis / Programming	Second of four levels of professional programming/analyst. The job typically requires a bachelor's degree and 2+ years of related experience, or equivalent. Under general supervision, studies specific administrative, scientific, or engineering functions to determine, define, and formulate the applicability of new or modified application programs. Identifies all aspects of the assigned problem and evaluates user requirements in terms of the capabilities of the available hardware and software. Develops proper documentation that outlines the logical steps to be followed in solving the problem and prepares systems specifications including input and output formats. Able to work in most aspects of application systems analysis in accordance with acceptable practices standards.
11223	Application Programming Analyst III (Advanced)	Systems Analysis / Programming	Third of four levels of professional programming/analyst. The job typically requires a bachelor's degree and 5+ years of related experience, or equivalent. Under general direction, plans and performs the analysis of major company activities and guides the subsequent design and implementation of systems for the application of electronic data processing or for the improvement of existing data processing applications. Job is concerned primarily with the broad aspects of data processing systems with the objective of utilizing available personnel resources and computer hardware and software to provide the information that is most useful to the company in the most efficient manner. Job is concerned with the interaction between systems, not only to avoid redundancies in storage and processing, but also to take advantage of new and more effective ways of providing needed information. May occasionally train and guide the work of less experienced analysts, but this function is incidental to specific projects.
11224	Application Programming Analyst IV (Principal)	Systems Analysis / Programming	Fourth of four levels of professional programming/analyst; highest level technical expert without supervisory responsibility. The job typically requires a bachelor's degree and 8+ years of related experience, or equivalent. Formulates, organizes, and provides technical direction to major projects involving all phases of application systems analysis. Will formulate, design, and guide systems analysis implementation projects while taking the capacity and limitation of the equipment, operating time, and form of desired results into consideration. Prepares detailed specifications from which programs will be written. Analyzes and revises existing system logic difficulties as necessary. Has full technical knowledge of all systems analysis activities, which may include instructing, directing, and checking the work of other systems analysis personnel. May also provide quality assurance reviews. Exclude supervisors with permanent responsibility of a particular department.

## Job Descriptions

Number	Job Title	Family	Job Description
11225	Application Programming Analyst Manager	Systems Analysis / Programming	Plans, implements and coordinates application system programming projects. Works with user requests for systems development and determines data processing requirements, then allocates resources and determines time frames. Typically requires a bachelor's degree in a computer-related field and 8+ years of experience. Determines programming team resources based on project needs. Supervises programmers. Monitors process of programming against commitments. Provides technical expertise to the programming team and others in the organization. Typically reports to a manager or department head.
11226	Mgr App Systems Analysis/Prog and Op Systems Programming	Overall Programming/System Analyst Management	Managerial job with combined responsibility for all systems analysis, applications programming and operating systems programming. Is responsible for the establishment of priorities and schedules for the development of data processing applications and for the development and maintenance of standards for systems analysis and programming. Responsible for directing all technical efforts leading to the successful configuration between software systems, hardware configuration and application programs. May be responsible for or participate in the evaluation of new computer hardware & software systems to determine feasibility of installation. The job typically requires a bachelor's degree and 8+ years of experience.
11232	Telecommunications Technician II (Experienced)	Telecom	Responsible for monitoring communications networks and assisting in resolving problems. Assists with planning, administration, design, and implementation of telecommunications services. Installs telecommunications equipment, provides training, and assists with user questions and problems. The job requires a technical degree and 2+ years of experience.
11233	Telecommunications Technician III (Advanced)	Telecom	Coordinates the planning, administration, and implementation of corporate wide telecommunications services in order to improve productivity and minimize costs. Responsible for monitoring communications networks, identifying problems, and resolving problems. May provide technical assistance to employees in other parts of the organization. May direct work of other telecommunications technicians. Involved in analysis, design and deployment process for new technology or changes within the telecommunications environment. The job requires a technical degree and 5+ years of experience.
11236	Telecommunications Programmer/ Systems Analyst I (Entry)	Telecom	First of three levels of telecommunications programmer/systems analyst. The job requires a four year degree and no related experience, or equivalent. Under direct supervision, assists senior-level telecommunications programming and systems analysis support to corporate operating business unit telecommunications services. Assists in develops, tests and implements communications software interface programs. Carries-out progressively more difficult assignments in the use of most programming languages applicable to telecommunications equipment.
11237	Telecommunications Programmer/ Systems Analyst II (Experienced)	Telecom	Second of three levels of telecommunications programmer/systems analyst. The job requires a four year degree and two years of related experience, or equivalent. Under general supervision, provides telecommunications programming and systems analysis support to corporate or independently operating business unit telecommunications services. Develops, tests and implements communications software interface programs. Has working proficiency in the use of most programming languages applicable to telecommunications equipment.
11238	Telecommunications Programmer/ Systems Analyst III (Advanced)	Telecom	Third of three levels; highest non-supervisory telecommunications programmer /systems analyst. Provides technical leadership to programming and systems analysis support of corporate-wide or independently operating business unit telecommunications services. Typically will have a four-year degree and 5+ years of experience, or equivalent. Will develop and test complex communications software interface programs requiring a high level of proficiency in the use of most programming languages applicable to telecommunications. Experienced in communications protocol, hardware and real time operating system programming. Provides technical guidance pertaining to front end devices, communications simulation and queuing analysis.
11241	Telecommunications Ops Mgr, Data and Voice Communications	Telecom	Oversees all operational aspects of both data and voice network(s). Assists with the strategic planning and direction of the company's telecommunications systems. Identifies company needs and plans telecommunications systems to meet present and future needs. Manages the telecommunications function, including design, implementation and maintenance of the organization's voice and data telecommunications networks and services. Directly or indirectly supervises all telecommunications personnel. Oversees the research and design of changes and enhancements to the telecommunications network. Manages telecommunications budget. Typically requires a bachelor's degree and 6+ years of experience, or equivalent.

## Job Descriptions

Number	Job Title	Family	Job Description
11242	Director of Telecommunications Services	Telecom	Responsible for the strategic planning and direction of the company's telecommunications systems. Identifies company needs and plans telecommunications systems to meet present and future needs. Manages the telecommunications function, including design, implementation and maintenance of the organization's voice and data telecommunications networks and services. Directly or indirectly supervises all telecommunications personnel. Oversees the research and design of changes and enhancements to the telecommunications network. Manages telecommunications budget. Typically requires a bachelor's degree and 8+ years of experience, or equivalent.
11251	Help Desk I (Entry)	User Support	First of three levels of help desk job. The job typically requires reading, communication and math skills commensurate with a high school diploma or GED and 1+ years of training and experience in computer software and hardware applications, or equivalent. Assists users in resolving problems through discussion and diagnosis. Takes the necessary steps to remedy the problem and refers more complex problems to a higher level.
11252	Help Desk II (Experienced)	User Support	Second of three levels of help desk job. The job typically requires specialized training beyond high school and 2+ years of experience in computer software and hardware applications, or equivalent. Assists users in resolving problems through discussion and diagnosis. Takes the necessary steps to remedy the problem. Incumbents are usually able to diagnose problems and will refer problems requiring specialized intervention to a higher level.
11253	Help Desk III (Advanced)	User Support	Third of three levels of help desk job, sometimes called Coordinator. The job typically requires specialized training beyond high school and 5+ years of experience in computer software and hardware applications, or equivalent. Assists users in resolving difficult problems, often referred by less experienced staff, through discussion and diagnosis. Takes the necessary steps to remedy the problem. Incumbents are nearly always able to diagnose problems and will refer problems requiring specialized intervention to a higher level. Incumbents at this level may provide work direction and training to others. May dispatch Computer Technicians.
11255	Help Desk Manager	User Support	Manager position responsible for directing the day-to-day activities of the Help Desk Department and its analysts, ensuring performance standards and service levels are met. The job typically requires a four-year degree and 5+ years of experience, or equivalent. Manages and delivers all end-user support, maintenance, and scheduling of new installations and may manage dispatching of technicians. Ensures that technical problems are promptly handled with a minimal amount of user inconvenience. Monitors staff and their resolution of user problems to ensure optimum user-system performance. Will implement the necessary administrative procedures to monitor, log, and track technical problems and/or user difficulties. Typically, this position takes part or is the lead person in the evaluation of software/hardware used by the help desk group. Will prepare reports related to department activities, system functionality, and staff performance. Exclude those who simply lead the department by their ability to resolve the more technical problems.
11262	PC Specialist	User Support	Installs, modifies, and makes minor repairs to personal computer hardware and software systems. Analyzes user needs and recommends hardware and software configurations matched to needs. Provides technical assistance and training to system users. Installs or assists service personnel in installation of hardware and peripherals. Loads software packages onto computer. Responds to inquiries concerns systems and diagnoses problems. Instructs users in use of equipment, software and manuals. Replaces defective or inadequate software packages.
11263	Technical Support Analyst	User Support	Reviews and evaluates information systems operations and provides technical support so that end users can accomplish business tasks. Responsible for implementing, supporting, and monitoring the overall infrastructure. Establishes new servers, platforms, and networks in conjunction with technical consultants. Resolves end user requests. Installs, diagnoses, repairs and maintains all hardware and networking equipment and refers more complex problems to others.
11265	Technology Trainer	User Support	Under general direction, develops and conducts or contracts for technology training programs to teach individuals in the organization how to use computer applications or programs such as spreadsheets, desktop publishing programs, or computer network systems software. Conducts skills/training needs assessment to determine priorities. Is knowledgeable about software and hardware used within the organization. Typically requires a bachelors degree and 3+ years of experience.

## Job Descriptions

Number	Job Title	Family	Job Description
11271	Web Administrator	Web	Technical job responsible for providing onsite technical and administrative support to maintain the technical integrity of the organization's web-based server. Utilizing knowledge of operating systems and internet services, performs the ongoing operation of the server software, including maintaining system security, monitoring usage statistics and logs, and modifying configuration settings as needed to achieve optimal performance. Monitors site for acceptable performance and user accessibility. Will perform system tests to determine connectivity, capacity testing, performance tuning, and hardware/software responsibility. Maintains servers, creates monitoring reports and logs, and ensures functionality of links. May establish backups and monitor site security.
11272	Webmaster	Web	Staff website generalist responsible for maintaining and modifying the organization's Internet/Intranet efforts including content, graphical and multimedia displays, and communications. Responsible for all or most of the organizations internet and/or intranet technical functions. The webmaster may be the sole internal person responsible for site design, administration and content and may rely on other internal staff or vendors for various aspects. Qualifications typically are a two or four-year degree in computer science and five or more years of related experience, or equivalent, with specialized knowledge of web technologies, HTML, graphics design and layout, and computer file management. Responsibilities may include overall site mapping, creating graphics, establishing specifications for content and web development, and for managing the work of outside vendors hired to develop databases, interactive applets, and custom graphics. Interacts with content professionals for the purpose of updating existing information and creating new content. Has experience and skill with dominant applications to maintain and modify the organization's internet/intranet efforts including content, graphical and multimedia displays, and communication. Has working knowledge of multiple web operating systems (i.e., Linux, Unix, Solaris, JavaOS, Mac) and strong knowledge of the systems used.
11273	Web Content Administrator	Web	Develops, organizes and manages Web sites. Administers and maintains the written, visual and audio content of a website. Works with others in the organization to determine internet or intranet content. Refreshes web site content to ensure accuracy and timeliness of material. Analyzes traffic to Web site and recommends programming changes. Provides technical support and participates in employee web site training. Integrates new technologies into web site. Typically requires an associate's degree and 2+ years of experience or a bachelor's degree with related coursework or experience.
11275	Web Graphics Designer I	Web	First of two levels of web graphics design. The job typically requires a two or four-year degree in computer science with focus on graphics or other graphics design coursework supplemented by computer knowledge. At this level the required experience is 2 years or less. Using a variety of graphics software applications, tools, and techniques, supports the organization's strategies and goals relative to external communications by designing graphic elements for web pages. Requires knowledge of web-based technologies such as Java and C++, computer animation, digital photography, operating systems and database management and thorough knowledge of HTML, PhotoShop, Illustrator, and/or other design-related applications.
11276	Web Graphics Designer II	Web	Second of two levels of web graphics design. At this level there is limited direction needed. The job typically requires a two or four-year degree in computer science with focus on graphics or other graphics design coursework supplemented by computer knowledge. At this level the required experience is 5+ years. Using a variety of graphics software applications, tools, and techniques, supports the organization's strategies and goals relative to external communications by designing graphic elements for web pages. Requires knowledge of web-based technologies such as Java and C++, computer animation, digital photography, operating systems and database management and thorough knowledge of HTML, PhotoShop, Illustrator, and/or other design-related applications. Adds links, ensuring theme consistency and scheduling workload. Duties usually include design, production, and creating functional links on the web. Incumbents may recommend modifications to the overall theme of the web site.
11281	Web Software Developer I (Entry)	Web	First of four levels of professional web developer. Assists in building, modifying and debugging software applications for web sites or web-based software products. Assists in web site planning and design. Works with design and technical staff on web site development needs. Works with engineering staff on project specifics, new technologies and deadlines. Writes code to create web pages, access databases and servers. Tests and documents software for web sites. Typically requires a degree in computer science, or equivalent.
11282	Web Software Developer II (Experienced)	Web	Second of four levels of professional web developer. Develops, modifies and debugs software applications, web pages and other customer facing web sites using a variety of technologies. Responsible for Web site planning and design. Works on multiple projects and communicates with customers and management on project status. Typically requires a bachelor's degree and 2+ years experience developing web sites. May lead teams of developers. Identifies system deficiencies and recommends solutions.

## Job Descriptions

Number	Job Title	Family	Job Description
11283	Web Software Developer III (Advanced)	Web	Third of four levels of professional web developer. Develops, modifies and debugs software applications, web pages and other customer facing web sites using a variety of technologies. Responsible for Web site planning and design. Works on multiple projects and communicates with customers and management on project status. Typically requires a bachelor's degree and 5+ years experience developing web sites. May lead teams of developers. Identifies system deficiencies and recommends solutions.
11284	Web Software Developer IV (Principal)	Web	Fourth of four levels of professional web developer. Develops, modifies and debugs software applications, web pages and other customer facing web sites using a variety of technologies. Responsible for Web site planning and design. Works on multiple projects and communicates with customers and management on project status. Provides technical direction to graphic designers and other members of a project team to develop the site concept, interface design, and architecture of the website. Has a thorough knowledge of programming and server software operations. Works closely with engineering, web-graphics designers, content managers, and artisans to ensure website is developed according to concept designs and agreed upon specifications. Will oversee the technical efforts of lower level developers. Will have project lead responsibilities. This position is usually the top technical classification among web software developers and incumbents usually have a mastery of various web-based languages combined with 8+ years of related experience.