




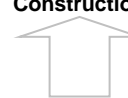

The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fuel, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.

Sample Career Specialties / Occupations	<p>Agricultural Sales • Agricultural Communications Specialists • Agricultural-Educators • Food Scientists • Meat Processors-Toxicologists • Biochemists-Nutritionists-Dieticians • Food Brokers-Food Inspectors • Meat Cutters-Meat Graders • Meat Science Researchers • Food Meal Supervisors • Cheese Makers • Microbiologists • Produce Buyers • Bacteriologists • Food & Drug Inspectors • Bioengineers • Biochemists • Food & Fiber Engineers • Food Processors • Storage Supervisors • Fieldman • Quality Control Specialists</p>	<p>Bioinformatics Specialists • Plant Breeders and Geneticists • Biotechnology Lab Technician • Soil & Water Specialists • Crop Farm Managers • Agricultural Educators • Plant Pathologists • Aquaculturalists • Sales Representatives • Botanists • Tree Surgeons • Education & Extension Specialists • Agricultural Journalists • Commodity Marketing Specialists • Grain Operations Superintendents • Custom Hay/Silage Operators • Forest Geneticists • Golf Course Superintendents • Greenhouse Mangers • Growers • Farmers • Ranchers</p>	<p>Agricultural Educators • Livestock producers • AI Technicians-Aquaculturalists • Animal Caretakers-Poultry Managers • Equine Managers-Veterinarians • Veterinary Assistants-Feedlot Specialists • Animal Scientists • Embryo Technologists • Livestock Buyers • Feed Sales Representatives • Vivarian Technicians • Wildlife Biologists • Livestock Geneticists • Animal Nutritionists • Dairy Producers • Livestock Inspectors • Feed Sales Specialists • Animal Health Salespersons • Meat Science Researcher • Reproductive Physiologists • Embryo Transfer Technicians • Pet Shop Operators • USDA Inspectors</p>	<p>Machine Operators • Electronics Systems Technicians • Agricultural Engineers • Agricultural Extension Engineering Specialists • Heavy Equipment Maintenance Technicians • Recycling Technicians • Waste Water Treatment Plant Operators • Equipment/Parts Managers • Welders • Machinists • Communication Technicians • Agricultural Applications Software Developers/Programmers • Database Administrators • Computer Service Technicians • Information Lab Specialists • GPS Technicians • Remote Sensing Specialist • Agricultural Educator</p>	<p>Cartographers • Wildlife Managers • Range Technicians • Ecologists Park Mangers • Environmental Interpreters • Fish and Game Officers Loggers • Forest Technicians • Log Graders • Pulp and Paper Manager Soil Geology Technician • Geologists • Mining Engineers Fisheries Technicians • Water Monitoring Technician • Hydrologists • Fish Hatchery Manager Commercial Fishermen • Fishing Vessel Operators • Vessel Crew • Agricultural Educator</p>	<p>Pollution Prevention and Control Managers • Pollution Prevention and Control Technicians • Environmental Sampling and Analysis Scientists/Technicians • Health and Safety Sanitarians • Environmental Compliance Assurance Managers • Hazardous Materials Handlers • Hazardous Materials Technicians / Managers • Water Environment Managers • Water Quality Managers • Waste Water Managers • Toxicologists • Solid Waste Disposers / Recyclers • Solid Waste Technician • Solid Waste Managers • Solid Waste Specialists • Agricultural Educator</p>	<p>Salesperson • Sales Manager • Banker/Loan Officer • Field Representative for Bank, Insurance Company or Government Program • Farm Investment Manager • Agricultural Commodity Broker • Agricultural Economist • Farmer /Rancher/Feedlot Operator • Farm Manager • Livestock Rancher / Breeder • Dairy Herd Supervisor (DHLA) • Agricultural Products Buyer • Animal Health Products Distributor • Livestock Seller • Feed and Supply Store Manager • Produce Commission Agent • Ag Lenders • Agricultural Chemical Dealer • Field Service Representative • Chemical Sales Representative • Agricultural Educator</p>
Pathways	<p>Food Products and Processing Systems (Food Processing and preserving, Packaging, Distribution, Government monitoring & regulation)</p>	<p>Plant Systems (Agronomic, Horticulture, Forestry, Turf, Viticulture, Soils, etc.)</p>	<p>Animal Systems (Large animals, small animals, wildlife animals, and research animals)</p>	<p>Power, Structural & Technical Systems (Power, Structures, Controls, Geospatial Technology, Computer Systems, Electronics, Hydraulics, Pneumatics, etc.)</p>	<p>Natural Resources Systems (Habitat Conservation, Forest Products, Parks and Recreation, Mining, Environmental Services, Fisheries, Soil Conservation, etc.)</p>	<p>Environmental Service Systems (Pollution Prevention, Water & Air Quality, Hazardous Materials, Solid Waste Management, Health & Safety Sanitation, etc.)</p>	<p>Agribusiness Systems (Sales, Service, Farm and Ranch Management, Entrepreneurship, Economics, etc.)</p>
Cluster K&S	<p>Cluster Knowledge and Skills</p> <p>◆ Premier Leadership ◆ Personal Growth ◆ Career Success ◆ Organizations and Associations ◆ Organizational structures and processes ◆ Safety, Health, and Environmental Management ◆ Health and safety procedures ◆ Tools, equipment, machinery and technology ◆ Issues ◆ Technology and globalization ◆ Scientific Inquiry</p>						





Careers in designing, planning, managing, building and maintaining the built environment.

Sample Career Specialties / Occupations	<ul style="list-style-type: none"> Architect • Architectural and Civil Drafter • Civil Engineer (structural, geotechnical, transportation, etc.) • Civil Engineering Technician • Code Official • Computer Aided Drafter (CAD) • Cost Estimator • Drafter • Electrical and Electronic Engineering Technician • Electrical Engineer (electronics, security, telecommunications) • Environmental Designer • Environmental Engineer (hydro engineering, acoustical, etc.) • Environmental Engineering Technician • Fire Prevention and Industrial Engineer • Interior Designer • Landscape Designer • Landscape Architect • Materials Engineer • Mechanical Drafter • Mechanical Engineer (HVAC, plumbing, fire protection, etc.) • Modeler (traditional and computer) Planner/Designer • Preservationist • Programmer • Protection Engineer • Regional and Urban Renderer (traditional and computer) • Specifications Writer • Building Surveying and Mapping Technician • Surveyor • 	<ul style="list-style-type: none"> Boilermaker • Carpenter • Carpet Installer • Concrete Finisher • Construction Craft Laborer • Construction Engineer • Construction Foreman • Construction Inspector • Construction Manager • Drywall Installer • Education and Training Director/Coordinator • Electrical & Power Transmission Installer Electrician • Electronic Systems Technician • Elevator Installer • Equipment and Material Manager • Estimator • Explosives Worker • Field Supervisor • Floor Layer • General Contractor/Builder • Glazier • Heating, Ventilation, Air Conditioning and Refrigeration Mechanic • Insulation Worker • Iron/Metalworker (structural and reinforcing) • Landscape/Groundskeeper • Lineworker • Manufacturer's Representative • <p>NOTE: General contractors/Builders and Specialty contractors typically own the contracting company.</p>	<ul style="list-style-type: none"> Mason • Millwright • Painter • Paperhanger • Pipe Fitter • Pipelaye • Pipeline Installer Plasterer/Drywall • Plumber • Preservationist • Project Inspector • Project Manager • Roofer • Safety Director • Sales and Marketing Manager • Scheduler • Security and Fire Alarm Systems Installer • Service Contractor • Sheetmetal Worker • Specialty Contractor • Specialty Trades Subcontractor Steamfitter • Subcontractor • Superintendent • System Installer • Terrazo Worker and Finisher • Tile and Marble Setter • 	<ul style="list-style-type: none"> Boilermaker • Carpenter • Carpet Installer • Concrete Finisher • Construction Manager • Construction Engineer • Construction Foreman • Construction Inspector • Cost Estimator • Demolition Engineer • Drywall Installer • Electrician • Electrician • Elevator Installer • Environmental Engineer • Equipment and Material Manager • Estimator • Facilities Engineer • Field Supervisor • General Maintenance Contractor • Glazier • Hazardous Materials Remove • Heating, Ventilation, Air Conditioning and Refrigeration Mechanic • Heavy Equipment Operator • Highway Maintenance Worker • Hydro Testing Technician • Insulation Worker • Insulation Worker • Iron/Metalworker (structural and reinforcing) • Landscape/Groundskeeper • Maintenance Estimator • Maintenance Planner/Scheduler • Manufacturer's Representative • 	<ul style="list-style-type: none"> Mason • Millwright • Operating Engineer • Paperhanger • Pipe Fitter • Pipelaye • Plumber • Preservationist • Project Inspector • Project Manager • Refractory Technician • Relay Technician Reliability Engineer • Remodeler • Restoration Technician • Safety Director • Sales and Marketing Manager • Scheduler • Security and Fire Alarm System Installer • Security Controls Manager • Service Contractor • Sheetmetal Worker • Specialty Trades Contractor • Steamfitter • Subcontractor • Substation Mechanic Superintendent • System Installer • Terrazo Worker and Finisher • Thermal Control Technician • Tile and Marble Setter • Utility Metering & Reg. Technician Wastewater Maintenance • Technician •
Pathways	<p>Design/Pre-Construction</p> 	<p>Construction</p> 		<p>Maintenance/Operations</p> 	
Cluster K&S	<p>Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academics ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 				

Designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Sample Career Specialties/Occupations</p>	<ul style="list-style-type: none"> ◆ Video Systems Technicians ◆ Video Graphics, Special Effects, and Animation ◆ Audio-Video Designers and Engineers ◆ Technical Computer Support Technicians, State, Film, Video, and DVD ◆ Audio-Video System Service Technicians ◆ Audio Systems Technicians 	<ul style="list-style-type: none"> ◆ Graphics and Printing Equipment Operators ◆ Lithographers and Platemakers ◆ Computer Typography and Composition Equipment Operators ◆ Desktop Publishing Specialists; Web Page Designers 	<ul style="list-style-type: none"> ◆ Commercial Photographers, Digital, Still, Video, Film ◆ Interior Designers, Commercial/Residential and Home Furnishings coordinators ◆ Graphic Designers, CAD Technicians, and Fashion Illustrators ◆ Textile Designers ◆ Commercial Artists, Illustrators, and Artists, all Media ◆ Curators and Gallery Managers ◆ Fashion Designers 	<ul style="list-style-type: none"> ◆ Production Managers, Digital, Video, Stage ◆ Cinematographers, Film/Video Editors ◆ Dancers ◆ Play Writers, Screen Writers, Screen Editors, Script Writers ◆ Directors and Coaches, Performers, actors, Musicians ◆ Make-Up Artists and Costume Designers ◆ Stagecraft Designers, Lighters, Sets, Sound Effects, Acoustics, Painters ◆ Composers, Conductors, and Music Instructors 	<ul style="list-style-type: none"> ◆ Audio/Video Operations, Control Room Technician ◆ Station Managers and Radio & TV Announcers ◆ Publishers, Editors, and Journalists and Reporters, Print, Broadcast, Other ◆ Broadcast Technicians 	<ul style="list-style-type: none"> ◆ Telecommunication Technicians ◆ Telecommunication Equipment, Cable, Line Repairers/Installers ◆ Telecommunication Computer Programmers, and Systems Analysts
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Pathways</p>	<p style="text-align: center;">Audio and Video Technology and Film</p>	<p style="text-align: center;">Printing Technology</p>	<p style="text-align: center;">Visual Arts</p>	<p style="text-align: center;">Performing Arts</p>	<p style="text-align: center;">Journalism and Broadcasting</p>	<p style="text-align: center;">Telecommunications</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Cluster K&S</p>	<p style="text-align: center;">Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 					



Business Management and Administration careers encompass planning, organizing, directing and evaluating business functions essential to efficient and productive business operations. Business Management and Administration career opportunities are available in every sector of the economy.

Sample Career Specialties / Occupations	<p>Entrepreneur • Chief Executive Officer • General Manager • Accounting Manager • Accounts Payable Manager • Assistant Credit Manager • Billing Manager • Business & Development Manager • Compensation & Benefits Manager • Credit & Collections Manager • Payroll Manager • Risk Manager • Operations Manager • Public Relations Manager • Human Resource Manager • Management Analyst • Facilities Manager • Association Manager • Sports & Entertainment Manager • Hospital Manager • Government Manager • Public Organization Manager • Manufacturing Manager • Purchasing Manager • First Line Supervisor • Senior Manager • Management Trainee • Small Business Owner</p>	<p>• Information Systems Manager • Accounting Clerk • Accounting Supervisor • Adjuster • Chief Technology Officer • Auditor • Bookkeeper • Budget Analyst • Budget Manager • Billing Supervisor • Management Analyst • Controller • Merger & Acquisitions Manager • Price Analyst • Top Collections Executive • Information Technology Director • Chief Financial Officer • Finance Director • Certified Public Accountant • Project Manager • Cost Accountant • Librarian • Payroll Accounting Clerk</p>	<p>Human Resources Manager • International Human Resources Manager • Human Resources Coordinator • Industrial Relations Director • Compensation & Benefits Manager • Employment & Placement Manager • Employee Assistance Plan Manager • Training & Development Manager • Human Resources Consultant • Corporate Trainer • Training & Development Specialist • Conciliator/Mediator/Arbitrator • Employer Relations Representative • Labor & Personnel Relations Specialist • Affirmative Action Coordinator • Equal Employment Opportunity Specialist • OSHA/ADA Compliance Officer • Pay Equity Officer • Interpreter/Translator • Organizational Behaviorist • Occupational Analyst • Compensation, Benefits & Job Analyst Specialist • Human Resources Information Systems Specialist • Meeting & Convention Planner • Employment Interviewer, Private or Public • Employment Service • Personnel Recruiter • Human Resources Assistant • Payroll Professional • Identification Clerk • Human Resources Generalist</p>	<p>• Training and Development Manager • Operations Analyst • Sales Manager • Sales Representative • Broker • Agent • Assistant Store Manager • Department Manager • Assistant Department Manager • Salesperson • Customer Service Supervisor • Product Manager • Project Manager • Research & Development Manager • Budget Analyst • International Merchandising Manager & Supervisor • Marketing Manager • E-commerce Manager & Entrepreneur • Wholesale & Retail buyer • International Distribution Manager • Warehouse Manager • Logistics Manager/Supervisor • Logistics Manager/Coordinator • Marketing Information Manager • Public Relations Specialist • Distribution Worker • Wholesale, Freight, Stocking, Handling, Material Moving and Packing Worker • Traffic, Shipping, & Receiving Clerk • Demonstrator and Product Promoter • Supply Chain Manager • Director of Non-Profit Agency/Organization • Operations Specialties Manager • Industrial Production Manager</p>	<p>Administrative Assistant • Executive Assistant • Office Manager • Administrative Support • Information Assistant • Desktop Publisher • Customer Service Assistant • Data Entry Specialist • Receptionist • Communications Equipment Operator • Computer Operator • Stenographer • Dispatcher • Shipping & Receiving Assistant • Word Processor • Medical Transcriptionist • Legal Secretary • Paralegal</p>
Pathways	General Management	Business Information Management	Human Resources Management	Operations Management	Administrative Support
<p>Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 					



Planning, managing and providing education and training services, and related learning support services.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Sample Career Specialties / Occupations</p>	<p>Elementary and Secondary Superintendents, Principals, Administrators</p> <ul style="list-style-type: none"> •Supervisors and Instructional Coordinators •Education Researchers, Test Measurement Specialists/ Assessment Specialists •College Presidents, Deans, Department Chairs, Program Coordinators Post-Secondary Administrators •Curriculum Developers •Instructional Media Designers Education and Training Technician Labor Relations Managers/Specialists 	<ul style="list-style-type: none"> •Psychologists- Clinical, Developmental, Social •Social Workers •Parent Educators •Counselors •Program Advisors •Financial Aid Advisors •Career Counselors/ Advisors •Career and Employment Placement Counselors •Speech-Language Pathologists and Audiologists •Instructional Resources Coordinator •Technology Support Administrator Database Administrators/AV Specialists •Distance Education Coordinator Human Resources Manager Organization Development Specialist Training Manager/Coordinator Instructional Coordinators Museum Coordinators/Technicians Media Coordinators/Specialists Instructional Media Designer 	<ul style="list-style-type: none"> • Preschool, Kindergarten Teachers, Aides •Elementary Teachers, Aides •Secondary/CTE Teachers, Aides •Special Education Teachers, Aides •College/University Lecturers, Professors Human Resource Trainers Physical Trainers Professional Coaches •Preschool & Child Care Program Directors •Child Care Assistants/Workers •Child Life Specialist •Nanny •Early Childhood Teachers and Assistants • Instructional Systems Specialist Corporate Trainers and Educators Adult Literacy Teachers Librarians/Assistants/ Technicians
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Pathways</p>	<p>Administration and Administrative Support</p>	<p>Professional Support Services</p>	<p>Teaching/Training</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Cluster K&S</p>	<p style="text-align: center;">Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 		



Planning, services for financial and investment planning, banking, insurance, and business financial management.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Sample Career Specialties / Occupations</p>	<p>Personal Financial Advisors • Tax Preparation Specialists • Sales Agents- Securities, Commodities • Investment Advisors • Brokerage Representatives • Development Officers • Securities/Investments Analysts • Stock Brokers</p>	<p>Accountants • Financial Analysts • Treasurers, Controllers and Chief Revenue Agents • Auditors • Economists • Tax Auditors • Collectors • Revenue Agents • Benefits Specialists • Real Estate Analysts • Certified Purchasing Professionals • Client Managers</p>	<p>Credit Analysts • Loan Officers • Account Representatives • Tellers • Loan Processors • Customer Service Reps • Data Processors • Internal Auditors • Compliance Officers • Title Researchers & Examiners • Abstractors • Repossession Agents • Network Service Representatives • Operations Managers • Debt Counselors</p>	<p>Claims Representatives, Examiners, and Investigators • Insurance Appraisers • Underwriters • Actuaries • Sales Agents • Customer Service Agents • Processing Clerks • Direct Marketing Representatives • Insurance Brokers • Loss Prevention Specialists</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Pathways</p>	<p>Securities & Investments</p>	<p>Business Finance</p>	<p>Banking Services</p>	<p>Insurance</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Cluster K&S</p>	<p>Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 			





Executing governmental functions to include Governance; National Security; Foreign Service; Planning; Revenue and Taxation; Regulation; and Management and Administration at the local, state, and federal levels.

Sample Career Specialties / Occupations	President Vice President Governor Lieutenant Governor Mayor Cabinet Level Secretary (Fed./ State) Representative (Fed/State) Senator (Fed/State) Assistants, Deputies, and Chiefs of Staff Commissioner (County, Parish, City) Commissioner (State Agency) Congressional Aide Legislative Aide Legislative Assistant Specialist Lobbyist Policy Advisor	National Security Advisor Staff or Field Officer Officer/Specialist: Electronic Warfare Operations Combat Operations Infantry Field Artillery Air Defense Artillery Special Forces Armor Munitions Nuclear Weapons Missile and Space Systems Military Intelligence Signals Intelligence Surface Ship Warfare Officer Submarine Officer Combat Control Officer Combat Engineer Combat Aircraft Pilot/Crew Airborne Warning/Control Specialist Intelligence/Counterintelligence Agent/Specialist Intelligence Analyst Cryptographer	Ambassador Foreign Service Officer: Consular Officer Administrative Officer Political Officer Economic Officer Diplomatic Courier	Business/Enterprise Official Chief of Vital Statistics Commissioner Director (Various Agencies) Economic Development Coordinator Federal Aid Coordinator Census Clerk County Director Census Enumerator Planner Program Associate Global Imaging Systems Specialist	Assessor Tax Auditor Internal Revenue Investigator Revenue Agent/Officer Tax Examiner/Assistant/Clerk Inspector General Tax Attorney Tax Policy Analyst	Business Regulation Investigator Chief of Field Operations Code Inspector/Officer Director Equal-Opportunity Officer Inspector Investigator/Examiner Chief Bank Examiner Bank Examiner Aviation Safety Officer Border Inspector Cargo Inspector Election Supervisor Enforcement Specialist Immigration Officer	City Manager City Council City or County Clerk Court Administrator or Clerk Executive Director/Officer/Associate: Foundation Association Charitable Organization Industrial Foundation Chamber of Commerce General Service Officer Management Analysis Officer Program Administration Officer
Pathways	Governance	National Security	Foreign Service	Planning	Revenue and Taxation	Regulation	Public Management and Administration
Cluster K&S	<p align="center">Cluster Knowledge and Skills</p> <p align="center"> ♦ Academic Foundations ♦ Communications ♦ Problem Solving and Critical Thinking ♦ Information Technology ♦ Systems ♦ Safety ♦ Health and Environment ♦ Leadership and Teamwork ♦ Ethics and Legal Responsibilities ♦ Employability and Career Development ♦ Technical Skills ♦ Fiscal Responsibilities </p>						



Sample Career Specialist/Occupation

<p>stant Anesthesia Technologist/Technician Art/Music/Dance Therapist(s) Athletic Trainer Audiologist Certified Nursing Assistant Chiropractor Chiropractic Assistant Dental Assistant/Hygienist Dental Lab Technician Dietitian/Nutritionist Dosimetrist EMT/Paramedic Endodontist Exercise Physiologist Home Health Aide Kinesiotherapist Licensed Practical Nurse Massage Therapist Medical Assistant Mental Health Counselor Naturopathic Doctor Nurse Anesthetist Nurse Midwife Nurse Practitioner Occupational Therapist/Assistant Oral Surgeon Orientation/Mobility Specialist Orthodontist Orthoptist Orthotist/Prosthetist/Technician Podiatrist Perfusionist Pharmacist Pharmacy Technician Physical Therapist/Assistant Physician (MD/DO) Physician Assistant Podiatrist Psychologist Psychiatrist Radiation Therapist Recreation Therapist Registered Nurse Rehabilitation Counselor Respiratory Therapist Speech-Language Therapist Surgical Technician Veterinarian Veterinarian Assistant/Technician Vision Rehabilitation Therapist Wellness Coach</p>	<p>Audiologist Blood Bank Technology Specialist Cardiovascular Technologist Clinical Lab Technician Clinical Laboratory/Technologist Computer Tomography (CT) Technologist Cytogenetic Technologist Cytotechnologist Dentist Diagnostic Medical Sonographer Electrocardiographic (ECG) Technician Electroencephalogram (EEG) Technologist Electronic Diagnostic (EEG) Technologist Exercise Physiologist Geneticist Geriatrician Histotechnician Histotechnologist Magnetic Resonance Technologist Mammographer Medical Technologist/ Clinical Laboratory Scientist Nuclear Medicine Technologist Optician Ophthalmologist Ophthalmic Assistant/Technologist Optometrist Pathologist Pathologists' Assistant Phlebotomist Polysomnographic Technologist Positron Emission Tomography (PET) Technologist Radiologic Technologist Radiologist Speech-Language Pathologist</p>	<p>Admitting Clerk Applied Researcher Compliance Technician Clinical Account Manager Clinical Account Technician Clinical Data Specialist Community Services Specialists Data Quality Manager Epidemiologist Ethicist Health Educator Health Information Mgmt. Administrator Health Information Mgmt. Technician Healthcare Access Manager Healthcare Administrator Healthcare Finance Informatician Information Privacy Officer Managed Care Contract Analyst Medical Coder Medical Historian Medical Illustrator Medical Information Technologist Medical Librarian Medical Transcriptionist Patient Account Manager Patient Account Technician Patient Advocate Patient Information Coordinator Project Manager Public Health Educator Quality Management Specialist Quality Data Analyst Research and Decision Support Specialist Reimbursement Specialist Risk Manager Unit Coordinator Utilization Manager Utilization Review Manager</p>	<p>Animal Behaviorist Biomedical/Clinical Engineer Biomedical/Clinical Technician Clinical Simulator Technician Central Service Manager Central Service Technician Community Health Worker Dietary Manager Dietetic Technician Environmental Health Advocate Environmental Health Practitioner Environmental Services/ Specialist Facilities Manager Food Safety Specialist Health Advocate Hospital Maintenance Engineer Industrial Hygienist Interpreter Marital, Couple, Family Counselor/Therapist Materials Manager Medical Health Counselor Mortician/ Funeral Director Nurse Educator Occupational Health Nurse Occupational Health & Safety Expert Social Worker Transport Technician</p>	<p>Biochemist Bioinformatics Scientist Biomedical Chemist Biomedical Manufacturing Technician Biostatistician Cancer Registrar Cell Biologist Clinical Data Management Specialist Clinical Pharmacologist Clinical Trials Monitor Clinical Trials Research Coordinator Crime Scene Investigator Diagnostic Molecular Scientist Forensic Biologist Forensic Chemist Forensic Odontologist Forensic Pathologist Genetic Counselor Geneticist-Lab Assistant Lab Technician Medical Editor/Writer Microbiologist Molecular Biologist Nurse Researcher Packaging Technician Patent Lawyer Pharmaceutical/Clinical Project Manager Pharmaceutical Sales Representative Pharmaceutical Scientist Pharmacokineticist Pharmacologist Product Safety Scientist Process Development Scientist Processing Technician Quality Assurance Technician Quality Control Technician Regulatory Affairs Specialist Research Assistant Research Scientist Toxicologist</p>	
<p>Pathways</p>	<p>Therapeutic Services</p>	<p>Diagnostics Services</p>	<p>Health Informatics</p>	<p>Support Services</p>	<p>Biotechnology Research and Development</p>
<p>Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academic Foundation ◆ Communications ◆ Systems ◆ Employability Skills ◆ Legal Responsibilities ◆ Ethics ◆ Safety Practices ◆ Teamwork ◆ Health Maintenance Practices ◆ Technical Skills ◆ Information Technology Applications <p>Revised July 2009</p>					



Hospitality & Tourism encompasses the management, marketing and operations of restaurants and other foodservices, lodging, attractions, recreation events and travel related services.

Sample Career Specialties/Occupations	<p>General Manager •Food & Beverage Manager •Kitchen Manager •Catering & Banquets Manager •Service Manager• Dining Room Supervisor •Restaurant Owner •Baker •Brewer •Caterer •Dietician •Executive Chef •Cook •Pastry & Specialty Chef •Bartender •Restaurant Server •Banquet Server •Cocktail Server •Banquet Set-Up Employee• Bus Person •Room Service Attendant •Kitchen Steward •Counter Server •Wine Steward •Host •Research and Development Chef •Food/Beverage Wholesaler •Product Demonstrator •Personal Chef</p>	<p>Front Office Manager •Executive Housekeeper •Director of Sales & Marketing •Chief Engineer •Director of Human Resources •Rooms Division Manager •Director of Security •Controller •Food & Beverage Director •Resident Manager •Director of Operations •General Manager •Regional Manager •Quality Assurance Manager •Corporate Management •Lodging Management •Owner/Franchisee •Uniformed Services Support •Communications Supervisor •Front Desk Supervisor •Reservations Supervisor •Laundry Supervisor •Room Supervisor •Bell Captain •Shift Supervisor •Sales Professional •Night Auditor •Front Desk Employee •Valet Attendant •Bell Attendant•Door Attendant •Concierge •Reservationist •Guestroom Attendant •Public Space Cleaner •House Person•Maintenance Worker•Van Driver</p>	<p>Executive Director •Assistant Director •Director of Tourism Development •Director of Membership Development •Director of Communications •Director of Visitor Services •Director of Sales •Director of Marketing and Advertising •Director of Volunteer Services •Director of Convention and Visitors Bureau •Market Development Manager •Group Sales Manager •Events Manager •Sales Manager •Destination Manager •Convention Services Manager •Heritage Tourism Developer •Travel Agent (Commercial & Vacation) •Event Planner •Meeting Planner •Special Events Producer •Nature Tourism Coordinator •Tour and Travel Coordinator •Tourism Marketing Specialist •Transportation Specialist • Welcome Center Supervisor •Visitor Center Counselor •Tourism Assistant •Executive Assistant •Tour Guide •Tour Operator •Motor Coach Operator •Tour and Ticket Reservationist •Interpreter</p>	<p>Club Manager•Club Assistant Manager•Club Instructor•Club Equipment & Facility Maintenance •Club Scheduler•Club Event Planner•Club Membership Developer•Parks & Gardens Director•Parks & Gardens Activity Coordinator•Parks & Gardens Access Management•Parks & Gardens Safety & Security•Parks & Garden Ranger•Resort Trainer•Resort Instructor•Resort Equipment Maintenance•Resort Scheduler•Gaming & Casino Manager•Gaming & Casino Supervisor•Gaming & Casino Dealer•Gaming & Casino Slot Supervisor and Maintenance•Gaming & Casino Security & Safety•Fairs/Festival Event Planner•Fairs/Festival Set up Supervisor•Fairs/Festival Facility Manager•Fairs/Festival Promotional Developer•Theme Parks/Amusement Parks Resale Department Manager•Theme Parks/Amusement Parks Area Retail Manager•Theme Parks/Amusement Parks Area Ride Operations Manager•Theme Parks/Amusement Parks Group Events Manager•Family Centers Manager•Family Centers Equipment Operator/Maintenance•Historical /Cultural/Architectural Ecological Industrial Sites Guides/Ranger•Historical/Cultural/Architectural Ecological Industrial Sites Exhibit Developer•Museums/Zoos/Aquariums Docent•Museum/Zoos/Aquariums Animal Trainer and Handler•Museums/Zoos/Aquariums Exhibit Developer</p>
Pathways	Restaurants and Food/Beverage Services	Lodging	Travel & Tourism	Recreation, Amusements & Attractions
<p style="text-align: center;">Cluster Knowledge and Skills</p> <p style="text-align: center;">◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills</p>				



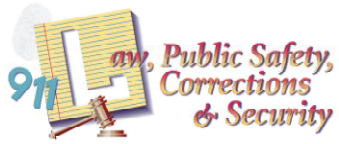
Preparing individuals for employment in career pathways that relate to families and human needs.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Sample Career Specialties / Occupations</p>	<p>Directors, Childcare Facilities Assistant Directors, Childcare Facilities Elementary School Counselors Preschool Teachers Educators for Parents Nannies Teachers' Assistants Childcare Assistants/Workers</p>	<p>Clinical and Counseling Psychologists Industrial-Organizational Psychologists Sociologists Career Coaches School Counselors/Psychologists Substance Abuse and Behavioral Disorder Counselors Mental Health Counselors Vocational Rehabilitation Counselors Career Counselors Career Facilitators Employment Counselors Residential Advisors Marriage, Child and Family Counselors</p>	<p>Community Service Directors Adult Day Care Coordinators Coordinators of Volunteers Licensed Professional Counselors Religious Leaders Directors, Religious Activities/Education Programs Human Services Workers Social Services Workers Vocational Rehabilitation Counselors Employment Counselors Career Counselors Vocational Rehabilitation Service Workers Leisure Activities Coordinators Dieticians Geriatric Service Workers Adult Day Care Workers Residential Advisors Emergency and Relief Workers Community Food Service Workers Community Housing Service Workers Social and Human Services Assistants</p>	<p>Barbers Cosmetologists, Hairdressers, & Hairstylists Shampooers Nail Technicians, Manicurists & Pedicurists Skin Care Specialists/Estheticians Electrolysis Technicians Electrologists Funeral Directors/Morticians Embalmers Funeral Attendants Personal and Home Care Aides Companions Spa Attendants Personal Trainers Massage Therapists</p>	<p>Consumer Credit Counselors Consumer Affairs Officers Consumer Advocates Certified Financial Planners Insurance Representatives Bankers Real Estate Services Representatives Financial Advisors Investment Brokers Employee Benefits Representatives Hospital Patient Accounts Representatives Customer Service Representatives Consumer Research Department Representatives Consumer Goods or Services Retailing Representatives Market Researchers Account Executives Sales Consultants Event Specialists Inside Sales Representatives Field Merchandising Representatives Buyers Small Business Owners</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Pathways</p>	<p>Early Childhood Development & Services</p>	<p>Counseling & Mental Health Services</p>	<p>Family & Community Services</p>	<p>Personal Care Services</p>	<p>Consumer Services</p>
<p style="text-align: center;">Cluster Knowledge and Skills</p> <p style="text-align: center;">◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills</p>					



Building Linkages in IT Occupations Framework: For Entry Level, Technical, and Professional Careers Related to the Design, Development, Support and Management of Hardware, Software, Multimedia, and Systems Integration Services.

Sample of Career Specialties / Occupations	<p>Network Design and Administration: Communications Analyst * Data Communications Analyst * Information Systems Administrator * Information Systems Operator * Information Technology Engineer Network Consulting Engineer Network Pre-Sales Engineer Network: Administrator * Analyst * Architect * Engineer * Manager * Operations Analyst * Security Analyst * Specialist * Technician * Transport Administrator PC Support Specialist * Systems: Administrator * Engineer * Support Lead Technical Support Specialist * User Support Specialist Telecommunications Network Technician</p>	<p>Database Development and Administration: Data: Administrator * Analyst * Architect * Management Associate * Modeler * Modeling Specialist Database: Administration Associate * Administrator * Analyst * Developer * Manager * Modeler * Security Expert * DSS (Decision Support Services) * Knowledge Architect Senior: Database Administrator * Systems Analyst Systems: Administrator * Analyst Tester Technical Writer: Desktop Publisher * Document Specialist * Documentation Specialist * Editor Electronic Publications Specialist * Publisher Instructional Designer, Online Publisher Technical Communicator * Editor * Publications Manager * Writer Technical Support: Analyst * Call Center Support Representative * Content Manager Customer: Liaison * Service Representative * Service Professional Help Desk Specialist * Technician Maintenance Technician * PC Support Specialist * PC Systems Coordinator * Product Support Engineer * Sales Support Technician * Technical: Account Manager * Support Engineer * Support Representative Testing Engineer Enterprise Systems Analysis and Integration: Application Integrator * Business Continuity Analyst * Cross-Enterprise Integrator Data: Systems Designer * Systems Manager * Warehouse Designer E-Business Specialist * Electronic Transactions Implementer Information Systems: Architect * Planner Systems: Analyst * Architect * Integrator</p>	<p>Digital Media: 2D/3D Artist * Animator * Audio/Video Engineer * Designer * Media Specialist * Media/Instructional Designer Multimedia: Author * Authoring Specialist * Developer * Specialist Producer * Production Assistant * Programmer * Streaming Media Specialist * Virtual Reality Specialist Web: Designer * Producer * Specialist Web Development and Administration: Web: Administrator * Architect * Designer * Page Developer * Producer * Site Developer * Specialist Webmaster Web Developer Social Networking Specialist Blog Developer * Search Engine Marketing Specialist Search Engine Optimization Specialist</p>	<p>Programming / Software Engineering: Applications: Analyst * Engineer Business Analyst * Computer Engineer * Data Modeler Operating System: Designer/Engineer * Programmer Analyst Program Manager * Programmer * Programmer/Analyst * Project Lead Software Applications: Specialist * Architect * Design Engineer * Development Engineer * Engineer * QA Specialist * Tester Systems: Analyst * Administrator Test Engineer * Tester</p>
Pathways	<p>Network Systems</p>	<p>Information Support and Services</p>	<p>Web and Digital Communications</p>	<p>Programming and Software Development</p>
Cluster K&S	<p>Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 			



Planning, managing, and providing legal, public safety, protective services and homeland security, including professional and technical support services.

Sample Career Specialties / Occupations	<p>Warden • Jail Administrator • Mid-level Manager • Program Coordinator and Counselor • Public Information Officer • Correctional Trainer • Case Manager • Attorney • Community Corrections Practitioner • Probation/parole officer • Corrections Educator • Corrections Officer • Detention Deputy • Detention and Deportation Officer • Case Manager • Youth Services Worker • Facility Maintenance Workers • Transport Officer • Food Service Staff • Medical Staff • Dietitian • Support Staff</p>	<p>Emergency Management and Response Coordinator • Emergency Planning Manager • EMT • Fire Fighter • Mgr/Supv. of Fire Fighters • Forest Fire Fighter • Mgr/Supv. of Forest Fire Fighters • Forest Fire Inspector & Investigator • Hazardous Materials Responder • Emergency Dispatchers for Police, Fire and Ambulance • Training Officer • Grant Writer and Coordinator • Rescue Workers • Consequence Management Specialist • Surety Officer • Fire Protection Inspector • Paramedic (Licensed) • Training and Exercises Program Analyst • Canine Enforcement Officer (Training) • Fire Protection Engineer • Infrastructure Analyst Specialist • Operations Analyst • Program Specialist (National Security) • Program Specialist (Response, Preparedness, Recovery/Mitigation)</p>	<p>Security Director • Corporate/Agency Security Director/VP • Corporate Director of Sales • Security Systems Designer/Consultant • Physical Security Specialist Consultant • Student Trainee – Investigations • Computer Forensics specialist • Private/Corporate Investigator • Loss Prevention/Security Manager (e.g. Store, hotel) • Security Trainer/Educator • Security Sales Representative/Manager • Loss Prevention Specialist • Physical Security Assistant • Security Systems Technician (Install/maintain) • Investigative Assistant (private sector) • Security Trainer (Basics) • Canine Enforcement Officer • Transportation Security Supervisor • Information Security Assistant (Document Control) • Personnel Security Assistant • Executive Protection Officer (Private) • Supervisory Security officer (armed, unarmed) • Certified Security Officer (SPO, POST, Arrest Authority) • Armored Car Guard • Control Center Operator (e.g. ADT) (Monitoring Center) • Uniformed Security Officer (Unarmed -- proprietary and contract) • Security Clerk • Transportation Security Technician • Loss Prevention Assistant • Uniformed Security officer (armed) • Computer Security Specialist • Computer Forensics Examiner • Executive Protection Specialist • Gaming Surveillance Specialist • Information Security specialist • Information Technology Security • Armored Car Guards • Industrial Espionage Security • Life Guard, Ski Patrol, • Physical Property Security • Private Security Specialist • Infrastructure Analyst – Specialist • IT Specialist (Information Security) • Intelligence Research-Operations Specialist • Operations Analyst • Port Security Specialist • Transportation Security Screener</p>	<p>• Animal Control Officer • Bailiffs • Child Support • Missing Persons • Unemployment Fraud Investigators • Aircraft Operations Officer • Criminal Investigators & Special Agents • Adjudicator • Air Enforcement Officer • Gaming Investigator • Bomb Technician • Game Enforcement Officer • Highway Patrol Pilots • Immigration & Customs Inspectors • Mgr/Supv. Police & Detectives • Police Detectives and Criminal Investigators • Air Marshall • Police, Fire & Ambulance Dispatchers • Police & Patrol Officers • Private Detectives & Investigators • Sheriffs & Deputy Sheriffs • Training Officer • Transit & Railroad Police • Park Ranger • Evidence Technician • Federal Marshall • Border Patrol Agent • Canine Enforcement Officer • Customs and Border Protection Officer • Deportation Officer • Document Analyst • Fingerprint Identification Technician • Forensic Science Technician • Import Specialist • IT Specialist (Information Security) • Intelligence Research - Operations Specialist • Port Security Specialist • Marine Enforcement Officer</p>	<p>• Administrative Law • Attorney • Case Management Specialist • Court Reporter • File and Document Manager • Adjudicator • Information Officer • Student Trainee - Legal • Investigator • Judge • Asylum Officer – Hearings and Appeals • Law Clerk • Legal Assistant • Legal Secretary • Magistrate • Mediator/Arbitrator • Negotiator • Para legal</p>
Pathways	<p>Correction Services</p>	<p>Emergency and Fire Management Services</p>	<p>Security & Protective Services</p>	<p>Law Enforcement Services</p>	<p>Legal Services</p>
Cluster K&S	<p style="text-align: center;">Cluster Knowledge and Skills</p> <p style="text-align: center;">♦ Academic Foundations ♦ Communications ♦ Problem Solving and Critical Thinking ♦ Information Technology Applications ♦ Systems ♦ Safety, Health and Environmental ♦ Leadership and Teamwork ♦ Ethics and Legal Responsibilities ♦ Employability and Career Development ♦ Technical Skills</p>				



Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.

Sample Career Specialties/Occupations	<ul style="list-style-type: none"> ◆ Assembler ◆ Automated Manufacturing Technician ◆ Bookbinder ◆ Calibration Technician ◆ Electrical Installer and Repairer ◆ Electromechanical Equipment Assembler ◆ Extruding and Drawing Machine Setter/Set-Up Operator ◆ Extrusion Machine Operator ◆ Foundry Worker ◆ Grinding, Lapping, and Buffing Machine Operator ◆ Hand Packers and Packager ◆ Hoist and Winch Operator ◆ Instrument Maker ◆ Large Printing Press Machine Setter and Set-Up Operator ◆ Machine Operator ◆ Manager, Supervisor ◆ Medical Appliance Maker ◆ Milling Machine Setter, Set-Up Operator ◆ Millwright ◆ Operator, Tender, Cutter/Brazer, Solderer, Machine Operator ◆ Painter ◆ Pattern & Model Maker ◆ Precision Layout Worker ◆ Precision Optical Goods Worker ◆ Production Associate ◆ Sheet Metal Worker ◆ Solderer and Brazer ◆ Tool and Die Maker ◆ Welder 	<ul style="list-style-type: none"> ◆ Design Engineer ◆ Electrical and Electronics Technician and Technologist ◆ Electronics Engineer ◆ Engineering and Related Technician and Technologist ◆ Engineering Technician ◆ Industrial Engineer ◆ Labor Relations Manager ◆ Manufacturing Engineer ◆ Manufacturing Technician ◆ Power Generating and Reactor Plant Operator ◆ Precision Inspector, Tester, and Grader ◆ Process Improvement Technician ◆ Production Manager ◆ Purchasing Agent ◆ Supervisor 	<ul style="list-style-type: none"> ◆ Biomedical Equipment Technician ◆ Boilermaker ◆ Communication System Installer/Repairer ◆ Computer Installer/Repairer ◆ Computer Maintenance Technician ◆ Electrical Equipment Installer/Repairer ◆ Facility Electrician ◆ Industrial Electronic Installer/Repairer ◆ Industrial Facilities Manager ◆ Industrial Machinery Mechanic ◆ Industrial Maintenance Electrician ◆ Industrial Maintenance Mechanic ◆ Industrial Maintenance Technician ◆ Instrument Calibration and Repairer ◆ Instrument Control Technician ◆ Job/Fixture Designer ◆ Laser Systems Technician ◆ Maintenance Repairer ◆ Major Appliance Repairer ◆ Meter Installer/Repairer ◆ Millwright ◆ Plumber, Pipefitter and Steamfitter ◆ Security System Installer/Repairer 	<ul style="list-style-type: none"> ◆ Calibration Technician ◆ Inspector ◆ Lab Technician ◆ Process Control Technician ◆ Quality Control Technician ◆ Quality Engineer ◆ SPC Coordinator 	<ul style="list-style-type: none"> ◆ Communications, Transportation and Utilities Manager ◆ Dispatcher ◆ Freight, Stock, and Material Mover ◆ Industrial Truck and Tractor Operator ◆ Logistical Engineer ◆ Logistician ◆ Material Associate ◆ Material Handler ◆ Material Mover ◆ Process Improvement Technician ◆ Quality Control Technician ◆ Traffic Manager ◆ Traffic, Shipping, and Receiving Clerk 	<ul style="list-style-type: none"> ◆ Environmental Engineer ◆ Environmental Specialist ◆ Health and Safety Representative ◆ Safety Coordinator ◆ Safety Engineer ◆ Safety Team Leader ◆ Safety Technician
	Pathways	Production	Manufacturing Production Process Development	Maintenance, Installation & Repair	Quality Assurance	Logistics & Inventory Control
Cluster K & S	<p>Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environment ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 					



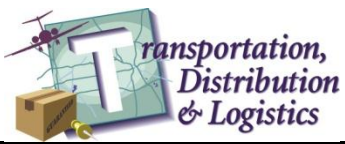
Planning, managing, and performing marketing activities to reach organizational objectives.

Sample Career Specialties / Occupations	<ul style="list-style-type: none"> • Entrepreneurs • Owners • Small Business Owners • Presidents • Chief Executive Officers • Principals • Partners • Proprietors • Franchisees • Independent X's (e.g., distributor) • Customer Service Representatives • Administrative Support Representatives (e.g., human resources, clerical, finance, technical) 	<ul style="list-style-type: none"> • Inbound Call Managers • Channel Sales Managers • Regional Sales Managers • Client Relationship Managers • Business Development Managers • Territory Representatives / Managers • Key Account Managers • National Account Managers • Account Executives • Sales Engineers • Sales Executives • Technical Sales Specialists • Retail Sales Specialists (big ticket) • Outside Sales Representatives • Industrial Sales Representatives • Manufacturer's Representatives • Salespersons • Field Marketing Representatives • Brokers • Agents • Field Representatives • Solutions Advisors • Sales/Marketing Associates • Telemarketers/Inside Sales Representatives • Customer Service Representatives • Administrative Support Representatives (e.g., human resources, clerical, finance, technical) 	<ul style="list-style-type: none"> • Store Managers • Retail Marketing Coordinators • Merchandising Managers • Merchandise Buyers • Operations Managers • Visual Merchandise Managers • Sales Managers • Department Managers • Sales Associates • Customer Service Representatives • Clerks (e.g., stock, receiving, etc.) • Administrative Support Representatives (e.g., human resources, clerical, finance, technical) 	<ul style="list-style-type: none"> • Advertising Managers • Public Relations Managers • Public Information Directors • Sales Promotion Managers • Co-op Managers • Trade Show Managers • Circulation Managers • Promotions Managers • Art/Graphics Directors • Creative Directors • Account Executives • Account Supervisors • Sales Representatives • Marketing Associates • Media Buyers/Planners • Interactive Media Specialists • Analysts • Contract Administrators • Copywriters • Research Specialists • Research Assistants • Customer Service Representatives • Administrative Support Representatives (e.g., human resources, clerical, finance, technical) 	<ul style="list-style-type: none"> • Database Managers • Research Specialists / Managers • Brand Managers • Marketing Services Managers • Customer Satisfaction Managers • (Research) Project Managers • CRM Managers • Forecasting Managers • Strategic Planners, Marketing • Product Planners • Planning Analysts • Directors of Market Development • Database Analysts • Analysts • Research Associates • Frequency Marketing Specialists • Knowledge Management Specialists • Interviewers • Customer Service Representatives • Administrative Support Representatives (e.g., human resources, clerical, finance, technical)
Pathways	Marketing Management	Professional Sales	Merchandising	Marketing Communications	Marketing Research
Cluster K&S	<p style="text-align: center;">Cluster Knowledge and Skills</p> <ul style="list-style-type: none"> ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 				



Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

Sample Career Specialties / Occupations	<p>Aerospace Engineer* Aeronautical Engineer* Agricultural Engineer* Agricultural Technician* Application Engineer* Architectural Engineer* Automotive Engineer* Biomedical Engineer* Biotechnology Engineer* Chemical Engineer* Civil Engineer* Communications Engineer* Computer Engineer* Computer Hardware Engineer* Computer Programmer* Computer Science Technician* Computer Software Engineer* Construction Engineer* Consultant* Development Engineer* Drafter* Electrical Engineer* Electrician* Electronics Technician* Energy Transmission Engineer* Environmental Engineer* Facilities Technician* Fire Protection Engineer* Geothermal Engineer* Hazardous Waste Engineer* Hazardous Waste Technician* Human Factors Engineer * Industrial Engineer* Industrial Engineering Technician* Licensing Engineer* Manufacturing Engineer* Manufacturing Technician* Manufacturing Processes Engineer* Marine Engineer* Materials Engineer* Materials Lab & Supply Technician* Mechanical Engineer* Metallurgic Engineer* Mining Engineer* Naval Engineer* Network Technician* Nuclear Engineer* Ocean Engineer* Operations Research Engineer* Packaging Engineer* Packaging Technician* Petroleum Engineer* Pharmaceutical Engineer* Plastics Engineer* Power Systems Engineer* Product Design Engineer* Project Engineer* Project manager* Prototype Engineer* Quality Engineer* Quality Technician* Radio/TV Broadcast Technician* Radiology Engineer* Researcher* Safety Engineer* Software Engineer* Sound Technician* Structural Engineer* Survey Technician* Systems Design Engineer* Technical Sales Manager* Technical Writer* Telecommunications Engineer* Textile Engineer* Transportation Engineer* Nuclear Engineer and Procurement Engineer</p>	<p>Analytical Chemist* Anthropologist* Applied mathematician* Archeologist* Astronomer* Astrophysicist* Atmospheric scientist* Biologist* Botanist* CAD operator* Cartographer* Chemist* Communications technologist* Conservation scientist* Cosmologist* Cryptographer* Crystallographer* Demographer* Dye chemist* Ecologist* Economist* Electronmicroscopist * Environmental scientist* Expert systems scientist* Geneticist* Geologist* Geophysicist* Geoscientist* Herpetologist* Hydrologist* Ichthyologist* Inorganic chemist* Laboratory Technician * Mammalogist* Marine scientist* Materials analyst* Materials scientist* Mathematician * Mathematics* Metallurgist* Meteorologist* Microbial Physiologist* Mycologist* Nanobiologist* Nuclear chemists* Nuclear technician* Numerical analyst* Nutritionist* Oceanographer* Organic chemist* Ornithologist* Paleontologist* Physicist* Polymer scientist* Programmer* Protein scientist* Protozoologist* Quality-control scientist* Radio chemist* Research chemist* Research Technician* Science Teacher * Lab Technician* Scientific visualization / graphics expert* Spectroscopist* Statistician* Technical writer* Technologist* Toxicologist* Zoologist*</p>
Pathways	<h3>Engineering and Technology</h3>	<h3>Science and Math</h3>
<h3>Cluster Knowledge and Skills</h3> <ul style="list-style-type: none"> ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environment ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills 		



Planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional and technical support services such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance.

Sample of Career Specialties / Occupations	<p>Air/Space Transportation: Transportation Managers (Air) * Commercial Pilots * Flight Engineers * Flight Attendants * Dispatchers (Air) * Traffic Managers * Air traffic Controllers * Aircraft Cargo Handling Supervisors * Airfield Operations Specialists</p> <p>Rail Transportation: Transportation Managers (Rail) * Dispatchers (Rail) * Traffic Managers * Locomotive Engineers * Locomotive Firers * Railyard Conductors and Yardmasters * Railroad Brake, Signal and Switch Operators * Railyard Engineers, Dinkey Operators, and Hostlers</p> <p>Water Transportation: Transportation Managers (Water) * Dispatchers (Water) * Traffic Managers * Captains * Mates * Pilots of Water Vessels * Sailors and Marine Oilers * Able Seamen * Ordinary Seamen * Ship and Boat Captains * Ship Engineers * Bridge and Lock Tenders</p> <p>Road Transportation Transportation managers (Road) * Dispatchers (Truck/Bus/Taxi) * Traffic Managers * Truck Drivers (Tractor-Trailer) * Truck Drivers (Light or Delivery Services) * Bus Drivers (Transit and Intercity) * School Bus Drivers * Taxi Drivers and Chauffeurs</p> <p>Transit Systems: Transportation Managers (Mass Transit) * Dispatchers (Bus) * Traffic Managers * Dispatchers (Rail) * Traffic Managers * Bus Drivers (Transit and Intercity) * Subway and Streetcar Operators</p>	<p>Logisticians * Logistics Managers * Logistics Engineers * Logistics Analysts * Logistics Consultants * International Logistics Specialists</p>	<p>Warehouse Managers * Storage and Distribution Managers * Industrial and Packaging Engineers * Traffic, Shipping and Receiving Clerks * Production, Planning, Expediting Clerks * First-line Supervisors/Managers of Helpers * Laborers, and Material Movers (Hand) * First-line Supervisors /Managers of Transportation and Material (Moving Machine and Vehicle Operators) * Laborers and Freight, Stock and Material Movers (Hand) * Car, Truck and Ship Loaders * Packers and Packagers-hand</p>	<p>Facility: Facility Maintenance Managers and Engineers * Industrial Equipment Mechanics * Industrial Electricians, * Electrical/Electronic Technicians</p> <p>Mobile Equipment: <u>General</u>--Mobile Equipment Maintenance Managers * Electrical and Electronic Installers and Repairers (Transportation Equipment) * Mobile Heavy Equipment Mechanics <u>Air/Space</u>--Aerospace Engineering and Operations Technicians * Aircraft Mechanics and Service Technicians * Airframe Mechanics * Power plant Mechanics * Aircraft Engine Specialists * Avionics Technicians <u>Water</u>--Ship Mechanics and Repairers * Motorboat Mechanics * Automotive/Truck Mechanics and Body Repairers <u>Rail</u>--Rail Car Repairers * Signal and Track Switch Repairers * Rail Locomotive Mechanics and Repairers <u>Road</u>--Electronic Equipment Installers and Repairers (Motor Vehicle) * Automotive Body and Related Repairers * Automotive Service Technicians and Mechanics * Automotive Master Mechanics * Automotive Specialty Technicians * Bus and Truck Mechanics and Diesel Engine Specialists * Motorcycle Mechanics * Bicycle Repairers</p>	<p><u>General</u>--Intermodal--Urban and Regional Planners * Civil Engineers * Engineering Technicians * Surveying and Mapping Technicians * Government Service Executives * Environmental Compliance Inspectors <u>Air/Space</u>--Air Traffic Controllers * Aviation Inspectors <u>Road</u>--Traffic Engineers * Traffic Technicians * Motor Vehicle Inspectors * Freight Inspectors <u>Rail</u>--Railroad Inspectors <u>Water</u>--Marine Cargo Inspectors * Vessel Traffic Control Specialists <u>Transit</u>--Public Transportation Inspectors <u>Other</u>--Regulators * Inspectors and other federal/state/local transportation agency jobs</p>	<p>Health and Safety Managers * Industrial Health and Safety Engineers * Environmental Scientists and Specialists * Environmental Science and Protection Technicians * Environmental Managers and Engineers * Environmental Compliance Inspectors * Safety Analysts</p>	<p>Marketing Managers, * Sales Managers * Sales Representatives of Transportation /Logistics Services * Reservation, Travel and Transportation Agents * Cargo and Freight Agents * Customer Service Managers * Cashiers, Counter and Rental clerks</p>
	Pathways	Transportation Operations	Logistics Planning and Management Services	Warehousing and Distribution Center Operations	Facility and Mobile Equipment Maintenance	Transportation Systems/ Infrastructure Planning, Management, and Regulation	Health, Safety and Environmental Management
<p>Cluster Knowledge and Skills</p> <p>◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems</p> <p>◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities</p> <p>◆ Employability and Career Development ◆ Technical Skills</p>							