

NEW HAMPSHIRE CAREER PLANNING GUIDE 2020-2030

Manufacturing Cluster Occupation, SOC Code, and Description	NH Occupational Projections					Future Outlook	2021 Wage Entry Level Median	Usual Education	Entry-Level Preparation			Apprentice	Military	NH License	Holland Interests			Career Cluster
	Employment		Avg. Annual Openings						Experience	Training	1 <sup>st</sup>				2 <sup>nd</sup>	3 <sup>rd</sup>		
	2020	2030	Exits	Transfers	Total													
<b>Adhesive Bonding Machine Operators and Tenders (51-9191):</b> Operate or tend bonding machines that use adhesives to join items for further processing or to form a completed product.	n	n	n	n	n	↘	\$15.18 \$18.57	High school diploma or equivalent	None	Moderate-term OJT				R	C		Production - Miscellaneous	
<b>Audiovisual Equipment Installers and Repairers (49-2097):</b> Install, repair, or adjust audio or television receivers, stereo systems, camcorders, video systems, or other electronic entertainment equipment in homes or other venues. May perform routine maintenance.	n	n	n	n	n	↘	\$17.90 \$22.90	Postsecondary non-degree award	None	Short-term OJT	★	★		R	C		Maintenance, Installation and Repair	
<b>Cabinetmakers and Bench Carpenters (51-7011):</b> Cut, shape, and assemble wooden articles or set up and operate a variety of woodworking machines, such as power saws, jointers, and mortisers to surface, cut, or shape lumber or to fabricate parts for wood products.	287	291	11	16	27	↗	\$16.22 \$22.38	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Woodworkers	
<b>Calibration and Engineering Technologists and Technicians, Except Drafters, All Other (17-3098):</b> All engineering technologists and technicians, except drafters, not listed separately, including Calibration Technologists and Technicians.	392	408	12	25	39	↗	n/a n/a	Associate's degree	None	None	★	★		R	I	C	Manufacturing Production Process Development	
<b>Chemical Equipment Operators and Tenders (51-9011):</b> Operate or tend equipment to control chemical changes or reactions in the processing of industrial or consumer products. Equipment used includes devulcanizers, steam-jacketed kettles, and reactor vessels.	177	198	4	14	20	↘	\$17.76 \$23.31	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	C		Production - Miscellaneous	
<b>Chemical Technicians (19-4031):</b> Conduct chemical and physical laboratory tests to assist scientists in making qualitative and quantitative analyses of solids, liquids, and gaseous materials for research and development, quality control, maintenance of environmental standards, and other work.	176	198	3	17	22	↗	\$17.14 \$22.66	Associate's degree	None	Moderate-term OJT	★	★		I	R	C	Manufacturing Production Process Development	
<b>Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders (51-9192):</b> Operate or tend machines to wash or clean products, such as barrels or kegs, glass items, tin plate, food, pulp, coal, plastic, or rubber to remove impurities.	124	129	4	9	13	↘	\$14.05 \$17.75	High school diploma or equivalent	None	Moderate-term OJT				R	C		Production - Miscellaneous	
<b>Coating, Painting, and Spraying Machine Setters, Operators, and Tenders (51-9121):</b> Set up, operate, or tend machines to coat or paint a variety of products, such as glass, cloth, ceramics, metal, plastic, paper, or wood, with lacquer, silver, copper, rubber, varnish, glaze, enamel, or rust-proof material.	494	530	14	37	55	↑	\$15.83 \$18.55	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Precision and Hand	
<b>Coil Winders, Tapers, and Finishers (51-2021):</b> Wind wire coils used in electrical components such as resistors and transformers, and in electrical equipment and instruments such as field cores, bobbins, armature cores, electrical motors, generators, and control equipment.	128	108	5	8	11	↓	\$14.42 \$18.09	High school diploma or equivalent	None	Moderate-term OJT				R	C	I	Production - Assemblers/Fabricators	
<b>Coin, Vending, and Amusement Machine Servicers and Repairers (49-9091):</b> Install, service, adjust or repair coin, vending, or amusement machines including video games, juke boxes, pinball machines, or slot machines.	n	n	n	n	n	↗	\$15.71 \$21.83	High school diploma or equivalent	None	Short-term OJT	★			R	C		Maintenance, Installation and Repair	
<b>Computer Numerically Controlled Tool Operators (51-9161):</b> Operate computer controlled tools, machines, or robots to machine or process parts, tools, or other work pieces made of metal, plastic, wood, stone, or other materials. May also set up and maintain equipment.	2,858	2,777	96	208	296	↗	\$17.21 \$23.09	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - CNC Operators	

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	Employment		Avg. Annual Openings						2021 Wage	Experience	Training				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	
	2020	2030	Exits	Transfers	Total													
<b>Computer Numerically Controlled Tool Programmers (51-9162):</b> Develop programs to control machining or processing of materials by automatic machine tools, equipment, or systems. May also set up, operate, or maintain equipment.	280	356	11	24	43	↑	\$25.24 \$29.94	Postsecondary non-degree award	None	Moderate-term OJT	★	★		C	I	R	Production - CNC Operators	
<b>Computer, Automated Teller, and Office Machine Repairers (49-2011):</b> Repair, maintain, or install computers, word processing systems, automated teller machines, and electronic office machines such as duplicating and fax machines.	653	636	20	49	67	↗	\$16.44 \$22.66	Some college, no degree	None	Short-term OJT	★	★		R	C	I	Maintenance, Installation and Repair	
<b>Cooling and Freezing Equipment Operators and Tenders (51-9193):</b> Operate or tend equipment, such as cooling and freezing units, refrigerators, batch freezers, and freezing tunnels to cool or freeze products, food, blood plasma, and chemicals.	n	n	n	n	n	↘	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Miscellaneous	
<b>Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders (51-9021):</b> Set up, operate, or tend machines to crush, grind, or polish materials such as coal, glass, grain, stone, food, or rubber.	203	202	7	15	22	↓	\$15.95 \$22.05	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Miscellaneous	
<b>Cutters and Trimmers, Hand (51-9031):</b> Use hand tools or hand-held power tools to cut and trim a variety of manufactured items, such as carpet, fabric, stone, glass, or rubber.	n	n	n	n	n	↓	\$12.72 \$14.31	No formal educational credential	None	Short-term OJT	★			R	C		Production - Miscellaneous	
<b>Cutting and Slicing Machine Setters, Operators, and Tenders (51-9032):</b> Set up, operate, or tend machines that cut or slice materials such as glass, stone, cork, rubber, tobacco, food, paper, or insulating material.	213	209	9	16	25	↓	\$15.42 \$22.95	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Miscellaneous	
<b>Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic (51-4031):</b> Set up, operate, or tend machines to saw, cut, shear, slit, punch, crimp, notch, bend, or straighten metal or plastic material.	604	585	19	41	58	↗	\$14.83 \$18.17	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Metal and Plastic	
<b>Dental Laboratory Technicians (51-9081):</b> Construct and repair full or partial dentures or dental appliances.	246	282	12	22	38	↑	\$17.28 \$22.91	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	I	C	Production - Precision and Hand	
<b>Drafters, All Other (17-3019):</b> All drafters not listed separately.	n	n	n	n	n	↓	\$20.01 \$25.60	Associate's degree	None	None		★		R	C		Manufacturing Production Process Development	
<b>Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4032):</b> Set up, operate, or tend drilling machines to drill, bore, ream, mill, or countersink metal or plastic work pieces.	36	29	1	2	2	↓	\$14.18 \$17.82	High school diploma or equivalent	None	Moderate-term OJT				R	C	I	Production - Metal and Plastic	
<b>Electric Motor, Power Tool, and Related Repairers (49-2092):</b> Repair, maintain, or install electric motors, wiring, or switches.	n	n	n	n	n	↘	\$23.64 \$29.59	High school diploma or equivalent	Less than 5 years	Moderate-term OJT	★	★		R	C		Maintenance, Installation and Repair	
<b>Electrical and Electronic Engineering Technologists and Technicians (17-3023):</b> Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, adjust, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions.	727	734	22	45	68	↗	\$22.91 \$30.01	Associate's degree	None	None	★	★		R	I	C	Manufacturing Production Process Development	

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<b>Electrical and Electronics Drafters (17-3012):</b> Prepare wiring diagrams, circuit board assembly diagrams, and layout drawings used for the manufacture, installation, or repair of electrical equipment.	115	126	4	8	13	↘	\$22.92 \$30.53	Associate's degree	None	None	★			R	C	I	Manufacturing Production Process Development	
<b>Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094):</b> Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas.	328	356	9	17	29	↑	\$18.50 \$24.58	Postsecondary non-degree award	None	Long-term OJT	★	★		R	I	C	Maintenance, Installation and Repair	
<b>Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095):</b> Inspect, test, repair, or maintain electrical equipment in generating stations, substations, and inservice relays.	n	n	n	n	n	↓	\$21.85 \$37.53	Postsecondary non-degree award	Less than 5 years	Moderate-term OJT	★	★		R	C		Maintenance, Installation and Repair	
<b>Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders (51-2028):</b> Assemble or modify electrical or electronic equipment, such as computers, test equipment, telemetering systems, electric motors, and batteries, or electromechanical equipment, such as servomechanisms, dynamometers, brakes, actuators, or appliances.	3,298	3,552	138	219	382	↑	\$15.39 \$18.33	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Assemblers/Fabricators	
<b>Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024):</b> Operate, test, maintain, or adjust unmanned, automated, servomechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment to observe or record visual information at sites such as oil rigs, crop fields, buildings, or for similar infrastructure, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.	122	123	4	8	12	↘	\$25.23 \$30.92	Associate's degree	None	None	★	★		R	I	C	Manufacturing Production Process Development	
<b>Engine and Other Machine Assemblers (51-2031):</b> Construct, assemble, or rebuild machines such as engines, turbines, and similar equipment used in such industries as construction, extraction, textiles, and paper manufacturing.	65	56	2	4	5	↓	\$18.65 \$22.19	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Assemblers/Fabricators	
<b>Etchers and Engravers (51-9194):</b> Engrave or etch metal, wood, rubber, or other materials. Includes such workers as etcher-circuit processors, pantograph engravers, and silk screen etchers.	100	103	6	6	12	↘	\$16.09 \$18.31	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Miscellaneous	
<b>Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic (51-4021):</b> Set up, operate, or tend machines to extrude or draw thermoplastic or metal materials into tubes, rods, hoses, wire, bars, or structural shapes.	n	n	n	n	n	↗	\$15.67 \$21.63	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Metal and Plastic	
<b>Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers (51-6091):</b> Set up, operate, or tend machines that extrude and form continuous filaments from synthetic materials such as liquid polymer, rayon, and fiberglass.	n	n	n	n	n	↓	\$14.79 \$18.70	High school diploma or equivalent	None	Moderate-term OJT				R			Production - Textile, Apparel, Furnishings	
<b>Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders (51-9041):</b> Set up, operate, or tend machines such as glass forming, plodder, or tuber machines to shape and form products, such as glassware, food, rubber, soap, brick, tile, clay, wax, tobacco, or cosmetics.	199	210	6	15	22	↘	\$15.25 \$17.59	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Miscellaneous	
<b>Fabric and Apparel Patternmakers (51-6092):</b> Draw and construct sets of precision master fabric patterns or layouts. May also mark and cut fabrics and apparel.	n	n	n	n	n	↓	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT	★			R	A	C	Production - Textile, Apparel, Furnishings	

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<b>Fiberglass Laminators and Fabricators</b> (51-2091): Laminate layers of fiberglass on molds to form boat decks and hulls, bodies for golf carts, automobiles, or other products.	n	n	n	n	n	↓	\$15.06 \$18.23	High school diploma or equivalent	None	Moderate-term OJT	★		R	C	I	Production - Assemblers/Fabricators	
<b>First-Line Supervisors of Mechanics, Installers, and Repairers</b> (49-1011): Directly supervise and coordinate the activities of mechanics, installers, and repairers. Excludes team or work leaders.	2,151	2,323	65	133	215	↑	\$24.78 \$36.72	High school diploma or equivalent	Less than 5 years	None		★	E	C	R	Maintenance, Installation and Repair	
<b>First-Line Supervisors of Production and Operating Workers</b> (51-1011): Directly supervise and coordinate the activities of production and operating workers, such as inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators.	2,974	3,102	91	204	308	↗	\$23.41 \$32.06	High school diploma or equivalent	Less than 5 years	None		★	E	R	C	Production - Assemblers/Fabricators	
<b>Forging Machine Setters, Operators, and Tenders, Metal and Plastic</b> (51-4022): Set up, operate, or tend forging machines to taper, shape, or form metal or plastic parts.	n	n	n	n	n	↓	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT	★		R	C	I	Production - Metal and Plastic	
<b>Foundry Mold and Coremakers</b> (51-4071): Make or form wax or sand cores or molds used in the production of metal castings in foundries.	146	143	5	10	15	↓	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT	★		R	C		Production - Metal and Plastic	
<b>Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders</b> (51-9051): Operate or tend heating equipment other than basic metal, plastic, or food processing equipment. Includes activities, such as annealing glass, drying lumber, curing rubber, removing moisture from materials, or boiling soap.	31	33	1	2	3	↘	\$16.71 \$21.61	High school diploma or equivalent	None	Moderate-term OJT	★		R	C		Production - Miscellaneous	
<b>Furniture Finishers</b> (51-7021): Shape, finish, and refinish damaged, worn, or used furniture or new high-grade furniture to specified color or finish.	n	n	n	n	n	↘	\$17.98 \$22.61	High school diploma or equivalent	None	Short-term OJT	★		R	A		Production - Woodworkers	
<b>Gas Plant Operators</b> (51-8092): Distribute or process gas for utility companies and others by controlling compressors to maintain specified pressures on main pipelines.	n	n	n	n	n	↓	n/a n/a	High school diploma or equivalent	None	Long-term OJT			R	C		Production - Energy/Plant and Systems	
<b>Grinding and Polishing Workers, Hand</b> (51-9022): Grind, sand, or polish - using hand tools or hand-held power tools - a variety of metal, wood, stone, clay, plastic, or glass objects. Includes chippers, buffers, and finishers.	35	30	1	2	3	↓	n/a n/a	No formal educational credential	None	Moderate-term OJT			R	C		Production - Miscellaneous	
<b>Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic</b> (51-4033): Set up, operate, or tend grinding and related tools that remove excess material or burrs from surfaces, sharpen edges or corners, or buff, hone, or polish metal or plastic work pieces.	694	669	31	47	76	↗	\$15.41 \$18.10	High school diploma or equivalent	None	Moderate-term OJT	★		R			Production - Metal and Plastic	
<b>Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic</b> (51-4191): Set up, operate, or tend equipment such as heat-treating furnaces, flame-hardening machines, induction machines, soaking pits, or vacuum equipment to temper, harden, anneal, or heat-treat metal or plastic objects.	94	92	3	6	9	↓	\$16.50 \$18.55	High school diploma or equivalent	None	Moderate-term OJT	★	★	R	C		Production - Metal and Plastic	
<b>Helpers--Production Workers</b> (51-9198): Help production workers by performing duties requiring less skill. Duties include supplying or holding materials or tools, and cleaning work area and equipment.	1,132	1,035	51	102	143	↗	\$13.31 \$16.16	High school diploma or equivalent	None	Short-term OJT		★	R	C		Production - Miscellaneous	
<b>Home Appliance Repairers</b> (49-9031): Repair, adjust, or install all types of electric or gas household appliances, such as refrigerators, washers, dryers, and ovens.	165	161	6	10	16	↓	\$14.45 \$21.16	High school diploma or equivalent	None	Moderate-term OJT	★	★	R	C	I	Maintenance, Installation and Repair	

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	2020	2030	Exits	Transfers													
<b>Industrial Engineering Technologists and Technicians (17-3026):</b> Apply engineering theory and principles to problems of industrial layout or manufacturing production, usually under the direction of engineering staff. May perform time and motion studies on worker operations in a variety of industries for purposes such as establishing standard production rates or improving efficiency. Includes Nanotechnology Engineering Technologists and Technicians.	563	605	18	36	58	↑	\$23.02 \$28.95	Associate's degree	None	None	★			I	R	C	Manufacturing Production Process Development
<b>Industrial Machinery Mechanics (49-9041):</b> Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems.	2,033	2,506	70	123	240	↑	\$19.81 \$28.06	High school diploma or equivalent	None	Long-term OJT	★	★		R	I	C	Maintenance, Installation and Repair
<b>Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061):</b> Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications. May use precision measuring instruments.	3,365	2,967	122	251	333	↗	\$16.79 \$22.74	High school diploma or equivalent	None	Moderate-term OJT	★	★		C	R		Quality Assurance
<b>Installation, Maintenance, and Repair Workers, All Other (49-9099):</b> All installation, maintenance, and repair workers not listed separately. Includes Geothermal Technicians.	262	288	10	18	31	↑	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT	★	★	★	R	C		Maintenance, Installation and Repair
<b>Jewelers and Precious Stone and Metal Workers (51-9071):</b> Design, fabricate, adjust, repair, or appraise jewelry, gold, silver, other precious metals, or gems. Includes diamond polishers and gem cutters, casting metal in molds, or setting precious and semi-precious stones.	92	83	5	6	10	↓	\$19.04 \$27.58	High school diploma or equivalent	None	Long-term OJT	★			R	A	C	Production - Precision and Hand
<b>Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4034):</b> Set up, operate, or tend lathe and turning machines to turn, bore, thread, form, or face metal or plastic materials such as wire, rod, or bar stock.	65	61	2	4	6	↓	\$17.84 \$23.05	High school diploma or equivalent	None	Moderate-term OJT	★			R	I	C	Production - Metal and Plastic
<b>Lay-Out Workers, Metal and Plastic (51-4192):</b> Lay out reference points and dimensions on metal or plastic stock or workpieces, such as sheets, plates, tubes, structural shapes, castings, or machine parts, for further processing. Includes shipfitters.	n	n	n	n	n	↘	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	C	I	Production - Metal and Plastic
<b>Locksmiths and Safe Repairers (49-9094):</b> Repair and open locks; make keys; change locks and safe combinations; and install and repair safes.	n	n	n	n	n	↓	\$17.30 \$22.55	High school diploma or equivalent	None	Long-term OJT	★	★		R	C		Maintenance, Installation and Repair
<b>Machine Feeders and Offbearers (53-7063):</b> Feed materials into or remove materials from machines or equipment that is automatic or tended by other workers.	546	572	32	41	76	↗	\$13.29 \$14.97	No formal educational credential	None	Short-term OJT				R	C		Production - Miscellaneous
<b>Machinists (51-4041):</b> Set up and operate a variety of machine tools to produce precision parts and instruments. May fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines.	1,942	2,103	68	138	222	↑	\$17.52 \$23.18	High school diploma or equivalent	None	Long-term OJT	★	★		R	C	I	Production - Metal and Plastic
<b>Maintenance and Repair Workers, General (49-9071):</b> Perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment or structures in repair, such as pipe fitting, insulating, welding, carpentry, or repairing electrical equipment, floors, or stairs.	4,917	5,436	182	302	536	↑	\$15.58 \$22.33	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	C	I	Maintenance, Installation and Repair
<b>Maintenance Workers, Machinery (49-9043):</b> Lubricate machinery, change parts, or perform other routine machinery maintenance.	193	215	7	11	20	↘	\$19.02 \$29.81	High school diploma or equivalent	None	Long-term OJT	★	★		R	C	I	Maintenance, Installation and Repair

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<b>Mechanical Drafters (17-3013):</b> Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.	316	306	10	20	29	↗	\$23.02 \$29.68	Associate's degree	None	None	★			R	C	I	Manufacturing Production Process Development	
<b>Mechanical Engineering Technologists and Technicians (17-3027):</b> Apply theory and principles of mechanical engineering to modify, develop, test, or adjust machinery and equipment under direction of engineering staff or physical scientists. Includes Automotive Engineering Technicians.	713	771	22	46	74	↑	\$22.18 \$29.13	Associate's degree	None	None	★	★		R	C	I	Manufacturing Production Process Development	
<b>Medical Appliance Technicians (51-9082):</b> Construct, fit, maintain, or repair medical supportive devices such as braces, orthotics and prosthetic devices, joints, arch supports, and other surgical and medical appliances.	61	70	3	5	9	↗	\$17.86 \$23.29	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	I	S	Production - Precision and Hand	
<b>Medical Equipment Repairers (49-9062):</b> Test, adjust, or repair biomedical or electromedical equipment.	190	206	9	12	23	↘	\$18.86 \$28.98	Associate's degree	None	Moderate-term OJT	★	★		R	I	C	Maintenance, Installation and Repair	
<b>Metal Workers and Plastic Workers, All Other (51-4199):</b> All metal workers and plastic workers not listed separately.	523	519	17	35	52	↗	\$13.85 \$18.10	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Metal and Plastic	
<b>Metal-Refining Furnace Operators and Tenders (51-4051):</b> Operate or tend furnaces, such as gas, oil, coal, electric-arc or electric induction, open-hearth, or oxygen furnaces, to melt and refine metal before casting or to produce specified types of steel.	61	63	1	4	5	↘	\$17.73 \$22.66	High school diploma or equivalent	None	Moderate-term OJT	★			R	I	C	Production - Metal and Plastic	
<b>Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic (51-4035):</b> Set up, operate, or tend milling or planing machines to mill, plane, shape, groove, or profile metal or plastic work pieces.	43	35	1	3	3	↓	\$17.20 \$23.20	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Metal and Plastic	
<b>Miscellaneous Assemblers and Fabricators (51-2090):</b> All assemblers and fabricators not listed separately. Includes Team Assemblers.	5,330	4,772	193	360	497	↗	\$13.43 \$17.86	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Assemblers/Fabricators	
<b>Mixing and Blending Machine Setters, Operators, and Tenders (51-9023):</b> Set up, operate, or tend machines to mix or blend materials such as chemicals, tobacco, liquids, color pigments, or explosive ingredients.	386	443	14	31	51	↑	\$16.59 \$22.38	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Miscellaneous	
<b>Model Makers, Metal and Plastic (51-4061):</b> Set up and operate machines such as lathes, milling and engraving machines, and jig borers to make working models of metal or plastic objects. Includes template makers.	32	32	1	2	3	↓	\$21.37 \$38.61	High school diploma or equivalent	None	Moderate-term OJT	★			R	I	C	Production - Metal and Plastic	
<b>Molders, Shapers, and Casters, Except Metal and Plastic (51-9195):</b> Mold, shape, form, cast, or carve products such as food products, figurines, tile, pipes, and candles consisting of clay, glass, plaster, concrete, stone, or combinations of materials.	121	152	5	9	17	↗	\$16.62 \$18.12	High school diploma or equivalent	None	Long-term OJT	★			R	C		Production - Miscellaneous	
<b>Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic (51-4072):</b> Set up, operate, or tend metal or plastic molding, casting, or coremaking machines to mold or cast metal or thermoplastic parts or products.	790	742	25	52	72	↗	\$13.86 \$17.71	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Metal and Plastic	

NEW HAMPSHIRE CAREER PLANNING GUIDE 2020-2030

Manufacturing Cluster Occupation, SOC Code, and Description	NH Occupational Projections					Future Outlook	2021 Wage Entry Level Median	Usual Education	Entry-Level Preparation			Apprentice	Military	NH License	Holland Interests			Career Cluster
	Employment		Avg. Annual Openings		Total				Experience	Training	1 <sup>st</sup>				2 <sup>nd</sup>	3 <sup>rd</sup>		
	2020	2030	Exits	Transfers														
<b>Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4081):</b> Set up, operate, or tend more than one type of cutting or forming machine tool or robot.	1,131	1,206	38	79	125	↗	\$14.35 \$18.09	High school diploma or equivalent	None	Moderate-term OJT	★			R			Production - Metal and Plastic	
<b>Musical Instrument Repairers and Tuners (49-9063):</b> Repair percussion, stringed, reed, or wind instruments. May specialize in one area, such as piano tuning.	n	n	n	n	n	↘	\$11.05 \$14.35	High school diploma or equivalent	None	Apprenticeship	★	★		R	A	I	Maintenance, Installation and Repair	
<b>Nuclear Power Reactor Operators (51-8011):</b> Operate or control nuclear reactors. Move control rods, start and stop equipment, monitor and adjust controls, and record data in logs. Implement emergency procedures as needed. Respond to abnormalities, determine cause, and recommend corrective action.	n	n	n	n	n	↓	n/a n/a	High school diploma or equivalent	None	Long-term OJT		★		R	C	E	Production - Energy/Plant and Systems	
<b>Nuclear Technicians (19-4051):</b> Assist nuclear physicists, nuclear engineers, or other scientists in laboratory or production activities. May operate, maintain, or provide quality control for nuclear testing and research equipment. May monitor radiation.	n	n	n	n	n	↓	n/a n/a	Associate's degree	None	Moderate-term OJT		★		R	C	I	Manufacturing Production Process Development	
<b>Ophthalmic Laboratory Technicians (51-9083):</b> Cut, grind, and polish eyeglasses, contact lenses, or other precision optical elements. Assemble and mount lenses into frames or process other optical elements. Includes precision lens polishers or grinders, centerer-edgers, and lens mounters.	107	120	5	9	15	↗	\$17.33 \$28.83	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	C		Production - Precision and Hand	
<b>Packaging and Filling Machine Operators and Tenders (51-9111):</b> Operate or tend machines to prepare industrial or consumer products for storage or shipment. Includes cannery workers who pack food products.	1,170	1,288	51	82	145	↑	\$13.88 \$18.23	High school diploma or equivalent	None	Moderate-term OJT				R	C		Production - Precision and Hand	
<b>Painting, Coating, and Decorating Workers (51-9123):</b> Paint, coat, or decorate articles such as furniture, glass, plateware, pottery, jewelry, toys, books, or leather.	73	76	2	5	7	↘	\$16.73 \$18.55	No formal educational credential	None	Moderate-term OJT	★			R			Production - Precision and Hand	
<b>Paper Goods Machine Setters, Operators, and Tenders (51-9196):</b> Set up, operate, or tend paper goods machines that perform a variety of functions, such as converting, sawing, corrugating, banding, wrapping, boxing, stitching, forming, or sealing paper or paperboard sheets into products.	179	159	8	11	17	↓	\$15.85 \$21.59	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Miscellaneous	
<b>Patternmakers, Metal and Plastic (51-4062):</b> Lay out, machine, fit, and assemble castings and parts to metal or plastic foundry patterns, core boxes, or match plates.	n	n	n	n	n	↓	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Metal and Plastic	
<b>Petroleum Pump System Operators, Refinery Operators, and Gaugers (51-8093):</b> Operate or control petroleum refining or processing units. May specialize in controlling manifold and pumping systems, gauging or testing oil in storage tanks, or regulating the flow of oil into pipelines.	n	n	n	n	n	↓	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	C		Production - Energy/Plant and Systems	
<b>Photographic Process Workers and Processing Machine Operators (51-9151):</b> Perform work involved in developing and processing photographic images from film or digital media. May perform precision tasks such as editing photographic negatives and prints.	n	n	n	n	n	↘	\$13.45 \$14.45	High school diploma or equivalent	None	Short-term OJT	★	★		C	R		Production - Precision and Hand	

NEW HAMPSHIRE CAREER PLANNING GUIDE 2020-2030

Manufacturing Cluster Occupation, SOC Code, and Description	NH Occupational Projections					Future Outlook	2021 Wage Entry Level Median	Usual Education	Entry-Level Preparation			Apprentice	Military	NH License	Holland Interests			Career Cluster
	Employment		Avg. Annual Openings		Total				Experience	Training	1 <sup>st</sup>				2 <sup>nd</sup>	3 <sup>rd</sup>		
	2020	2030	Exits	Transfers														
<b>Plant and System Operators, All Other (51-8099):</b> All plant and system operators not listed separately. Includes Biofuels Processing Technicians; Methane/Landfill Gas Generation System Technicians; Biomass Plant Technicians; and Hydroelectric Plant Technicians.	118	127	3	10	14	↘	\$21.76 \$28.65	High school diploma or equivalent	None	Moderate-term OJT		★	★	R	E	I	Production - Energy/Plant and Systems	
<b>Plating Machine Setters, Operators, and Tenders, Metal and Plastic (51-4193):</b> Set up, operate, or tend plating machines to coat metal or plastic products with chromium, zinc, copper, cadmium, nickel, or other metal to protect or decorate surfaces. Typically, the product being coated is immersed in molten metal or an electrolytic solution.	218	210	7	14	20	↓	\$15.90 \$18.23	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Metal and Plastic	
<b>Pourers and Casters, Metal (51-4052):</b> Operate hand-controlled mechanisms to pour and regulate the flow of molten metal into molds to produce castings or ingots.	40	39	1	3	4	↓	\$16.11 \$18.49	High school diploma or equivalent	None	Moderate-term OJT				R	C		Production - Metal and Plastic	
<b>Power Plant Operators (51-8013):</b> Control, operate, or maintain machinery to generate electric power. Includes auxiliary equipment operators.	117	95	3	7	8	↓	\$21.97 \$30.24	High school diploma or equivalent	None	Long-term OJT	★	★		R	C		Production - Energy/Plant and Systems	
<b>Precision Instrument and Equipment Repairers, All Other (49-9069):</b> All precision instrument and equipment repairers not listed separately.	62	64	3	4	7	↘	\$20.96 \$34.26	High school diploma or equivalent	None	Long-term OJT		★	★	R			Maintenance, Installation and Repair	
<b>Production Workers, All Other (51-9199):</b> All production workers not listed separately. Includes Recycling and Reclamation Workers.	1,031	1,106	37	79	124	↑	\$14.38 \$17.68	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	C		Production - Miscellaneous	
<b>Production, Planning, and Expediting Clerks (43-5061):</b> Coordinate and expedite the flow of work and materials within an establishment according to production schedule. Review and distribute schedules; confer with supervisors; and compile reports on progress, inventory, costs, or problems.	1,242	1,332	46	84	139	↑	\$19.04 \$26.51	High school diploma or equivalent	None	Moderate-term OJT	★	★		C	E		Quality Assurance	
<b>Radio, Cellular, and Tower Equipment Installers and Repairers (49-2021):</b> Repair, install or maintain radio transmitting, broadcasting, and receiving equipment for two-way cellular, mobile broadband, ship-to-shore, or aircraft-to-ground communication systems, or service and emergency vehicle radios.	n	n	n	n	n	↘	\$19.27 \$23.54	Associate's degree	None	Moderate-term OJT	★	★		R	C		Maintenance, Installation and Repair	
<b>Rolling Machine Setters, Operators, and Tenders, Metal and Plastic (51-4023):</b> Set up, operate, or tend machines to roll steel or plastic forming bends, beads, knurls, rolls, or plate or to flatten, temper, or reduce gauge of material.	n	n	n	n	n	↓	\$17.15 \$21.60	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Metal and Plastic	
<b>Sawing Machine Setters, Operators, and Tenders, Wood (51-7041):</b> Set up, operate, or tend wood sawing machines. May operate CNC equipment. Includes lead sawyers.	171	153	6	12	16	↓	\$13.97 \$17.96	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Woodworkers	
<b>Security and Fire Alarm Systems Installers (49-2098):</b> Install, program, maintain, and repair security and fire alarm wiring and equipment. Ensure that work is in accordance with relevant codes.	331	379	8	27	40	↑	\$22.42 \$29.63	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	C		Maintenance, Installation and Repair	
<b>Semiconductor Processing Technicians (51-9141):</b> Manufacture semiconductors by loading material into furnace; sawing ingots into segments; loading segments into crystal growing chamber; sawing ingots into wafers; and cleaning, polishing, and loading into furnaces or chemical baths to form circuitry.	79	84	3	6	9	↘	n/a n/a	High school diploma or equivalent	None	Moderate-term OJT				R	C	I	Production - Precision and Hand	



NEW HAMPSHIRE CAREER PLANNING GUIDE 2020-2030

Manufacturing Cluster Occupation, SOC Code, and Description	NH Occupational Projections					Future Outlook	2021 Wage Entry Level Median	Usual Education	Entry-Level Preparation			Apprentice	Military	NH License	Holland Interests			Career Cluster
	Employment		Avg. Annual Openings						Experience	Training	1 <sup>st</sup>				2 <sup>nd</sup>	3 <sup>rd</sup>		
	2020	2030	Exits	Transfers	Total													
<b>Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders (51-9012):</b> Set up, operate, or tend equipment to extract, sort, or separate liquids, gases, or solids from other materials to recover a refined product.	249	265	6	20	28	↗	\$17.10 \$19.12	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	I	Production - Miscellaneous	
<b>Sewing Machine Operators (51-6031):</b> Operate or tend sewing machines to join, reinforce, decorate, or perform related sewing operations in the manufacture of garment or nongarment products.	520	421	28	25	43	↗	\$12.01 \$14.37	No formal educational credential	None	Short-term OJT	★			R	C		Production - Textile, Apparel, Furnishings	
<b>Shoe and Leather Workers and Repairers (51-6041):</b> Construct, decorate, or repair leather and leather-like products, such as luggage, shoes, and saddles.	n	n	n	n	n	↓	\$13.51 \$17.99	High school diploma or equivalent	None	Moderate-term OJT	★			R	C	A	Production - Textile, Apparel, Furnishings	
<b>Shoe Machine Operators and Tenders (51-6042):</b> Operate or tend a variety of machines to join, decorate, reinforce, or finish shoes and shoe parts.	n	n	n	n	n	↓	n/a n/a	High school diploma or equivalent	None	Short-term OJT				R	C		Production - Textile, Apparel, Furnishings	
<b>Stationary Engineers and Boiler Operators (51-8021):</b> Operate or maintain stationary engines, boilers, or other mechanical equipment to provide utilities for buildings or industrial processes. Operate equipment such as steam engines, generators, motors, turbines, and steam boilers.	124	124	6	9	15	↓	\$23.43 \$28.95	High school diploma or equivalent	None	Long-term OJT	★	★		R	I	C	Production - Energy/Plant and Systems	
<b>Textile Bleaching and Dyeing Machine Operators and Tenders (51-6061):</b> Operate or tend machines to bleach, shrink, wash, dye, or finish textiles or synthetic or glass fibers.	140	129	7	9	15	↓	\$13.11 \$16.90	High school diploma or equivalent	None	Short-term OJT				R			Production - Textile, Apparel, Furnishings	
<b>Textile Cutting Machine Setters, Operators, and Tenders (51-6062):</b> Set up, operate, or tend machines that cut textiles.	134	126	7	8	14	↓	\$13.41 \$17.36	High school diploma or equivalent	None	Moderate-term OJT				R	C		Production - Textile, Apparel, Furnishings	
<b>Textile Knitting and Weaving Machine Setters, Operators, and Tenders (51-6063):</b> Set up, operate, or tend machines that knit, loop, weave, or draw in textiles.	233	213	12	14	24	↓	\$14.63 \$17.29	High school diploma or equivalent	None	Short-term OJT	★			R	C		Production - Textile, Apparel, Furnishings	
<b>Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders (51-6064):</b> Set up, operate, or tend machines that wind or twist textiles, or draw out and combine sliver, such as wool, hemp, or synthetic fibers. Includes slubber machine and drawing frame operators.	99	91	5	6	10	↓	\$13.59 \$16.07	High school diploma or equivalent	None	Moderate-term OJT	★			R	C		Production - Textile, Apparel, Furnishings	
<b>Textile, Apparel, and Furnishings Workers, All Other (51-6099):</b> All textile, apparel, and furnishings workers not listed separately.	114	112	6	7	13	↓	\$14.23 \$17.95	High school diploma or equivalent	None	Short-term OJT	★			R	C		Production - Textile, Apparel, Furnishings	
<b>Tool and Die Makers (51-4111):</b> Analyze specifications, lay out metal stock, set up and operate machine tools, and fit and assemble parts to make and repair dies, cutting tools, jigs, fixtures, gauges, and machinists' hand tools.	259	264	10	16	26	↗	\$21.33 \$29.42	Postsecondary non-degree award	None	Long-term OJT	★			R	I	C	Production - Metal and Plastic	
<b>Tool Grinders, Filers, and Sharpeners (51-4194):</b> Perform precision smoothing, sharpening, polishing, or grinding of metal objects.	56	55	2	4	6	↓	\$16.72 \$22.66	High school diploma or equivalent	None	Moderate-term OJT	★	★		R	C		Production - Metal and Plastic	
<b>Upholsterers (51-6093):</b> Make, repair, or replace upholstery for household furniture or transportation vehicles.	52	48	2	3	5	↓	\$18.14 \$23.58	High school diploma or equivalent	None	Moderate-term OJT	★			R			Production - Textile, Apparel, Furnishings	

NEW HAMPSHIRE CAREER PLANNING GUIDE 2020-2030

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	Employment		Avg. Annual Openings						Education	Experience	Training				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	
	2020	2030	Exits	Transfers	Total													
<b>Watch and Clock Repairers (49-9064):</b> Repair, clean, and adjust mechanisms of timing instruments, such as watches and clocks. Includes watchmakers, watch technicians, and mechanical timepiece repairers.	n	n	n	n	n	↓	n/a n/a	High school diploma or equivalent	None	Long-term OJT	★			R	C	I	Maintenance, Installation and Repair	