

**SKILLS FRAMEWORK FOR ENERGY AND CHEMICALS
SKILLS MAP - R&D CHEMIST**

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| Sector | Energy and Chemicals | | | | |
| Track | Research and Development (R&D) | | | | |
| Occupation | Chemist | | | | |
| Job Role | R&D Chemist | | | | |
| Job Role Description | <p>The R&D Chemist performs complex technical laboratory-based studies, experiments, analyses and evaluations for Research and Development (R&D) projects. He/She develops research objectives and proposals for new product innovation and supports the execution of projects for new technology, materials or ingredients.</p> | | | | |
| | <p>The R&D Chemist supports the development of advanced solutions and formulations, in compliance with Intellectual Property (IP) and patent rights, and determines new product specifications for production scale-up. He documents R&D work for internal and external customers, and makes recommendations to improve product research based on analyses of experimental data. In addition, he implements the Management of Hazardous Chemicals Programme (MHCP) for the laboratory, in compliance with Workplace Safety and Health (WSH) and Environmental Management System (EMS) requirements.</p> | | | | |
| | <p>The R&D Chemist works in a team in the laboratory, and collaborates closely with the application and technical service teams to co-create new products. He is a good team player and has a creative and problem-solving mind-set. He is able to work independently, can manage multiple projects effectively, and possesses strong technical writing and presentation skills.</p> | | | | |
| Critical Work Functions and Key Tasks | Critical Work Functions | | Key Tasks | | |
| | Administer Workplace Safety and Health (WSH) and Environmental Management Systems (EMS) | | | Comply with WSH and EMS systems | |
| | | | | Conduct activity-based risk assessments | |
| | | | | Implement the Management of Hazardous Chemicals Programme (MHCP) | |
| | | | | Supervise good housekeeping in the workplace | |
| | Perform laboratory operations | | | Document Research and Development (R&D) work records for both internal and external customers | |
| | | | | Interpret and analyse experimental data and recommend improvements on product research | |
| | | | | Perform troubleshooting of R&D laboratory equipment in accordance with laboratory standards | |
| | Manage Research and Development (R&D) | | | Develop research objectives and proposals for new product innovations | |
| | | | | Maintain up-to-date knowledge of market requirements and scientific and technological developments within the industry | |
| | | | | Perform complex technical laboratory-based studies, experiments, analyses and evaluations for R&D projects | |
| | | | | Support innovation, new technology, materials or ingredients-related research projects | |
| | | | | Support reviews on new technologies and research techniques and integrate with R&D-based projects | |
| | | Support the design of experiments and tests according to market and business needs | | | |
| Manage new product development | | | Co-create new products in collaboration with technical service and application teams | | |
| | | | Determine new product specifications for production scale-up | | |
| | | | Develop Intellectual Property (IP) and patents of new products for business objectives | | |
| | | | Identify process development and scale-up for new and improved products | | |
| | | | Support the development of advanced solutions and formulations with compliance to IP and patent rights | | |
| Administer staff and organisational development | | | Adopt technologies to support virtual collaboration in remote locations | | |
| | | | Implement continuous improvement initiatives and activities | | |
| Skills & Competencies | Technical Skills and Competencies | | Generic Skills and Competencies (Top 5) | | |
| | Applied Research and Development Management | Level 4 | Creative Thinking | Intermediate | |
| | Change Management | Level 4 | Lifelong Learning | Intermediate | |
| | Continuing Professional Development Management | Level 4 | Communication | Intermediate | |
| | Continuous Improvement Management | Level 3 | Teamwork | Intermediate | |
| | Data and Statistical Analytics | Level 3 | Leadership | Intermediate | |
| | Environmental Management System Framework Development and Implementation | Level 3 | | | |
| | Innovation Management | Level 4 | | | |
| | Laboratory Data Reporting and Analysis Management | Level 4 | | | |
| | Laboratory Equipment Maintenance and Calibration Management | Level 3 | | | |
| | Laboratory Operations Management | Level 4 | | | |

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| Skills & Competencies | Materials Qualification | Level 3 | |
| | Procurement Management | Level 3 | |
| | Product Design and Development | Level 4 | |
| | Product Testing Management | Level 4 | |
| | Project Management | Level 4 | |
| | Quality Control Management | Level 3 | |
| | Sample Management | Level 4 | |
| | Technical Presentation | Level 4 | |
| | Technical Report Writing | Level 4 | |
| | Workplace Safety and Health Framework Development and Implementation | Level 3 | |
| | Workplace Safety and Health Hazard Identification and Risk Control Management | Level 3 | |
| Programme Listing | For a list of Training Programmes available for the Energy and Chemicals sector, please visit: www.skillsfuture.sg/skills-framework/energyandchemicals | | |

The information contained in this document serves as a guide.