

CSC

*Critical Skills Monitoring
Committee*

**PILOT
CRITICAL
OCCUPATIONS LIST
2015/2016**

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2015/2016



The **Pilot Critical Occupations List (COL)** reflects occupations that are **Skilled, Sought-after** and **Strategic** in six key sectors in Malaysia.

Table 1 presents the full COL across the six sectors, alongside additional information on each occupation. For further detail on each occupation, please click on the occupation within the table, or refer to the Appendix. **Table 2 to Table 7** present the critical occupations within each of the six key sectors.

Table 1: Critical Occupations List – Full List (42 Occupations)		
No.	Critical Occupation (MASCO Code)	Additional Information
1	Finance Managers (1211)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Financial Services Sector-(Commercial/Islamic Banking and Investment Banking Clusters)</u> <i>Financial Reporting Analysts; Tax Managers; Credit Risk Management; Financial Controllers</i> - <u>Accounting Sector</u> <i>Finance Directors; Financial Controllers; Chief Financial Controllers</i> • Bottom-up evidence also indicates that the occupation is hard-to-fill due to skills mismatch. • Common types of qualifications¹: Degree in Economics; Accountancy; Finance; Banking; Commerce
2	Policy and Planning Managers (1213)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>Project Managers; Project Leaders; Program Managers</i> <u>Further reference:</u> <i>E&E Sector Study on the Supply-Demand of Talent in Malaysia (pg. 134 - 147)</i>

¹ Based on Resident Pass Talent (RPT) and Returning Expert Programme (REP)

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3	Business Services Managers (1214)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Oil & Gas Sector</u> <i>Technical Sales Engineers; Wireline Sales Engineers</i> - <u>Electrical & Electronics Sector</u> <i>Sales Engineers; Marketing Engineers</i> - <u>Telecommunications & Multimedia Sector</u> <i>Production & Operation Manager; Business Services/Development Manager</i> <p><i>Further reference:</i> <i>PwC/MCMC Talent Gap Study for the Communications Sector in Malaysia (pg. 94 – 116)</i></p> - <u>Financial Services Sector</u> <i>Production and Operation/Business Managers; Business Services/Development Managers; Compliance Officers; Shariah Compliance Officers</i> <ul style="list-style-type: none"> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Telco/Multimedia sector.
4	Administrative Managers (1215)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sectors: <ul style="list-style-type: none"> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector– (Shared Services and Outsourcing Cluster)</u> <i>Contact Centre Managers</i> • Common types of qualifications: Diploma or higher in Computer Science/ Information Technology/ Engineering or equivalent.

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5	Research and Development Managers (1223)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Financial Services Sector– (Commercial/Islamic Banking and Investment Banking Clusters)</u> <i>Trade Product Specialist; Product Manager; Islamic Product Manager; Credit and Lending Product Developers</i>
6	Information and Communications Technology (ICT) Services Managers (1330)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Telecommunications & Multimedia Sector– (Wireless Technology and Fixed Line Technology Cluster)</u> <i>Network Strategists; Technology Strategists; IT Project Managers; Infrastructure Specialists; Database Specialists; Software Developers; Network Performance Managers; Network Operations Managers</i> <p><u>Further reference:</u> <i>PwC/MCMC Talent Gap Study for the Communications Sector in Malaysia (pg. 94 – 116)</i></p> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector</u> <i>Production and Operation/ Communications Managers; Information Systems Managers; Information Technology Managers; Computer Services Managers; Data Processing Managers</i> - <u>Financial Services Sector</u> <i>Software Analysts; Data Warehouse Specialist/ Modellers/ Scientists; Digital Banking/ Internet Technology Specialists; IT Security Specialists; Big Data/ Hadoop Engineers; Cloud Specialists</i> <ul style="list-style-type: none"> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Electrical & Electronics sector.

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No.	Critical Occupation (MASCO Code)	Additional Information
7	Geologists and Geophysicists (2114)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - Oil & Gas Sector (Tier 1: Production Sharing Employers) <i>Petroleum Geoscientists; Geologists; Oceanographers; Well Site Geologists; Operation Geologists; Reservoir Geologists; Sedimentologists; Subsurface Managers; Geophysicists; Seismic Interpreters</i> <p>Further reference: <i>PwC/TalentCorp Study on Talent Demand and Supply in the Oil & Gas Sector (pg. 107–174)</i></p> • This occupation is mainly involved in the following phases of the Oil & Gas industry: Exploration, Development, Production • Common types of qualifications¹: Degree or higher in Applied Geology; Geophysics; Geology or Physics
8	Mathematicians, Actuaries and Statisticians (2120)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - Electrical & Electronics Sector <i>Data Scientists; Data Analysts</i> - Telecommunications & Multimedia Sector– (Emerging Technologies Cluster) <i>Data Scientists; Predictive Analysts; Data Mining Analysts</i> - Information & Communications Technology (ICT) and Global Business Services (GBS) Sector <i>Data Scientists; Data Modellers, Data Analysts; Data Miners; Big Data and Analytics; Analytical Consultants</i> - Financial Services Sector– (Insurance/Takaful Cluster) <i>Appointed Actuaries; Pricing Actuaries; Valuation Actuaries</i> • Common types of qualifications: Degree in Economics; Mathematics and Statistics; Actuarial Science

¹ Based on Resident Pass Talent (RPT) and Returning Expert Programme (REP)

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No.	Critical Occupation (MASCO Code)	Additional Information
9	Industrial and Production Engineers (2141)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Oil & Gas Sector</u> <i>Automation Design – Electrical Engineers; Reliability Engineers; Process Development Engineers (Moulding)</i> - <u>Electrical & Electronics Sector</u> <i>Process Engineers; Preventive Maintenance (Facility); Packaging Engineers; Facilities Competent Engineers; Industrial Engineers</i>
10	Civil Engineers (2142)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Oil & Gas Sector (Tier 1: Production Sharing Employers)</u> <i>Structural Engineers; Facilities Project Managers; Foundation Engineers; Reliability and Safety Engineers; Construction Engineers</i> <p><u>Further reference:</u> <i>PwC/TalentCorp Study on Talent Demand and Supply in the Oil & Gas Sector (pg. 107 – 174)</i></p> • Bottom-up evidence received indicates the occupation is hard-to-fill in the oil & gas sector • Common types of qualifications: Degree in Mechanical Engineering; Civil Engineering; Petroleum Engineering

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No.	Critical Occupation (MASCO Code)	Additional Information
11	Mechanical Engineers (2144)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Oil & Gas Sector</u> <i>Mechanical Design Engineers; Facilities Engineers; Mechanical Maintenance Engineers; Reliability and Safety Engineers; Rotating Equipment Engineers; Operations Engineers; Fabrication Engineers</i> <u>Further reference:</u> <i>PwC/TalentCorp Study on Talent Demand and Supply in the Oil & Gas Sector (pg. 107 – 174)</i> - <u>Electrical & Electronics Sector</u> <i>Engineering Technologists; Mechanical Technologists; Industrial Machinery and Tools Engineers; Maintenance Engineers; Product Engineers; Media Process Engineers</i> <u>Further reference:</u> <i>E&E Sector Study on the Supply-Demand of Talent in Malaysia (pg. 134 -147)</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Oil & Gas and Electrical & Electronics sectors • Common types of qualifications: Degree in Mechanical Engineering
12	Chemical Engineers (2145)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Oil & Gas Sector</u> <i>Corrosion Engineers; Project Engineer/Managers; Product Quality Control/Assurance; Process Control Engineers; Terminal Managers</i> <u>Further reference:</u> <i>PwC/TalentCorp Study on Talent Demand and Supply in the Oil & Gas Sector (pg. 107 – 174)</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Oil & Gas sector. • Sought-after knowledge areas: Corrosion monitoring; Product quality control/assurance; process control; Terminal management

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No.	Critical Occupation (MASCO Code)	Additional Information
13	Mining Engineers, Metallurgists and Related Professions (2146)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Oil & Gas Sector</u> <i>Reservoir Engineers; Drilling Engineers; Petroleum Engineers; Well Engineers; Pipeline / Piping Engineers; Instrumentation Engineers</i> • Further reference: <i>PwC/TalentCorp Study on Talent Demand and Supply in the Oil & Gas Sector (pg. 107 – 174)</i> • Common types of qualifications: Degree or higher in Mechanical Engineering; Petroleum Engineering; Applied Physics; Chemistry; Geology
14	Engineering Professionals Not Elsewhere Classified (2149)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Oil & Gas Sector</u> <i>Procurement Engineers; Commissioning Engineers; Research Engineers</i> - <u>Electrical & Electronics Sector</u> <i>Photonic Engineers; Sputter Process Engineers; Module Characterisation Engineers; Aerospace Engineers; Sputter Equipment Engineers</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Oil & Gas and Electrical & Electronics sectors

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No.	Critical Occupation (MASCO Code)	Additional Information
15	Electrical Engineers (2151)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>IC Design Engineers; Embedded System/Firmware Engineers; RF Engineers; Media Process Engineers; Wafer Fabrication Process Engineers</i> <u>Further reference:</u> <i>E&E Sector Study on the Supply-Demand of Talent in Malaysia (pg. 134 - 147)</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Electrical & Electronics sector. • Common types of qualifications: Degree in Electrical & Electronics; Computer Engineering; Telecommunications; Mechanical Engineering; Material Engineering; Emphasis in IC Design/Microelectronic
16	Electronic Engineers (2152)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>RF Engineers; Embedded System/Firmware Engineers; Wafer Fabrication Process Engineers; IC Design Engineers;</i> <u>Further reference:</u> <i>E&E Sector Study on the Supply-Demand of Talent in Malaysia (pg. 134 - 147)</i> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector– System Design and Development Cluster</u> <i>Computer Engineers; Audio And Video Equipment Engineers; System Architects; Structural Designers</i> <u>Further reference:</u> <i>MSC Malaysia Skills Competency Matrix 2.0</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Electrical & Electronics sector • Common types of qualifications: Degree in Electrical & Electronics; Computer Engineering; Telecommunications; Mechanical Engineering; Material Engineering; Emphasis in IC Design/Microelectronic

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No.	Critical Occupation (MASCO Code)	Additional Information
17	Telecommunications Engineers (2153)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Telecommunications & Multimedia Sector– (Infrastructure for Wireless Technology and Infrastructure for Fixed Line Technology Cluster)</u> <i>Wireless Network Engineers; Radio Optimisation & Capacity Engineers; Core Network Service Assurance Engineers; Data Network Engineers; Network Deployment Managers; Value-added Services (VAS) Engineers; Transmission Network; IP Engineers; Network and System Engineers</i> <u>Further reference:</u> <i>PwC/MCMC Talent Gap Study for the Communications Sector in Malaysia (pg. 94 – 116)</i>
18	Graphic and Multimedia Designers (2166)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector– (Creative Multimedia Cluster)</u> <i>Web Designers; Graphics And Sound Specialists; Computer Specialists; Graphic Designers; Animators; 3D Modellers; Visual Effects Artists; 2D Animators, 3D Artists, Animation Directors</i> • Common types of qualifications: Degree or higher in Creative Multimedia; Computer Science; Information Technology or equivalent; Professional Certificate or higher in Art; Design; Creative Multimedia or equivalent • Common types of industry certification: Adobe Certified Associate, HTML Developer Certificate, Autodesk Maya
19	Manufacturing Professionals (2182)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>Manufacturing Specialists; Quality Assurance Executives; Production Executives; Warehouse Executives; Boiler Superintendents; Health and Safety Executive & Manager</i> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector</u> <i>Supply Chain/ Procurement Specialists; Presales Storage Consultants; Product Planners</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Electrical & Electronics sector.

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No.	Critical Occupation (MASCO Code)	Additional Information
20	Accountants (2411)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Oil & Gas Sector</u> <i>Operations Accountants; Production Accountants; Project Accountants; Drilling Accountants; Management Accountants</i> <u>Further reference:</u> <i>PwC/TalentCorp Study on Talent Demand and Supply in the Oil & Gas Sector (pg. 107 – 174)</i> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector (Shared Services and Outsourcing Cluster)</u> <i>Accountants; Auditors; Tax Consultants; Liquidators; Transaction Monitoring Managers</i> <u>Further reference:</u> <i>MSC Malaysia Skills Competency Matrix 2.0</i> - <u>Financial Services Sector</u> <i>Accountant; Auditors; Tax Consultants; Tax Managers; Adjusters</i> - <u>Accounting Sector</u> <i>Auditors; Accountants; Tax Consultants; Tax Managers; Technical Managers (Accounting)</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in ICT/Global Business Services and Accounting sectors • Common types of industry certification: MIA, ACCA, CIMA, CPA Australia, ICAEW, MICPA, CAANZ • Must be registered with Malaysian Institute of Accountants (MIA): Refer to MIA website for a list of recognised degrees and certifications
21	Financial and Investment Advisers (2412)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Financial Services Sector– (Commercial/Islamic Banking Cluster)</u> <i>Sales Managers; Sales Analysts; Client Relationship Managers; Wealth Managers; Financial Planners; Corporate Finance Advisers; High-net-worth Client Advisers</i>

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22	Financial Analysts (2413)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Telecommunications & Multimedia Sector</u> <i>Pricing Analysts</i> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector-(Shared Services and Outsourcing Cluster)</u> <i>Operational Risk Analysts; Financial Services Leaders; Solutions Consultants</i> - <u>Financial Services Sector– (Investment Banking Clusters)</u> <i>Research Analysts; Debt Analysts; Equity Analysts; Investment Analysts; Financial Officers; Risk Management Officers, Market Risk Officers; Credit Risk Officers</i> - <u>Accounting Sector (Public Practice)</u> <i>Fraud Specialists; Transfer Pricing; Fraud & Investigation Consultants</i> • Common types of industry certification: MIA, ACCA, Certified Financial Analyst (CFA), Chartered Financial Analyst (CFA), Certified Fraud Specialist (CFS)
23	Management and Organisation Analysts (2421)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Telecommunications & Multimedia Sector</u> <i>Market Research/ Business Analysts; Strategy Analysts</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Financial Services sector

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24	Personnel and Career Professionals (2423)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector (Shared Services and Outsourcing Cluster)</u> <i>Human Resource Analysts; HR Assistants; HR Consultants; Talent Acquisition Consultants</i> - <u>Financial Services Sector</u> <i>Human Resource Professionals</i>
25	Advertising and Marketing Professionals (2431)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Financial Services Sector</u> <i>Marketing Communications Specialists</i>
26	Systems Analysts (2511)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>Computer Analyst; Business (Information Technology) Analysts</i> - <u>Telecommunications & Multimedia Sector</u> <i>Systems/Computer Analysts; Business (IT) Analysts</i> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector- (IT Cluster)</u> <i>Computer Analysts; Business (Information Technology) Analysts; JDE Consultants; RPG Programmers</i> <p><u>Further reference:</u> <i>MSC Malaysia Skills Competency Matrix 2.0</i></p> <ul style="list-style-type: none"> - <u>Financial Services Sector</u> <i>Computer and System Administrators; System Analysis Engineers</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Electrical & Electronics, ICT/Global Business Services and Financial Services sectors • Common types of industry certification in ICT/Global business services sector: Microsoft Certified Professional Developer (MCPD); Microsoft Certified Solution Developer (MCSD)

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27	Software Developers (2512)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>Computer Programmers; Multimedia Programmers; Information Technology Researchers; Software Engineers; Root Cause Failure Analysis (RCFA) Engineers</i> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector-(Information Technology Cluster)</u> <i>SAP Application Developers</i> • Common types of qualifications: Degree or higher in Computer Science; Information Technology • Common types of industry certification in ICT/Global Business Services sector: SAP Certified – Associate Business Foundation & Integration with SAP ERP 6.0 EHP5; SAP Certified Development Consultant SAP NetWeaver 2004 – Application Development Focus ABAP
28	Applications Programmers (2514)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>CAD Engineers</i> - <u>Telecommunications & Multimedia Sector– (Infrastructure for Wireless Technology and Infrastructure for Fixed Line Technology Clusters)</u> <i>Software Developers; Systems Programmers</i> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector-(Creative Multimedia, Information Technology and System Design & Development Clusters)</u> <i>Computer Programmers; Communications Programmers; Multimedia Programmers; Database Programmers; Game Engine Programmers, User Interface (UI)/Gameplay Coders</i> - <u>Financial Services Sector</u> <i>Software Analysts</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Electrical & Electronics, ICT/Global Business Services, Telco/Multimedia and Financial Services sectors.

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No.	Critical Occupation (MASCO Code)	Additional Information
29	Software and Application Developers and Analysts Not Elsewhere Classified (2519)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector-(Information Technology Cluster)</u> <i>Product Assurance Engineers; QA Analysts, QA Executives; Quality Engineers; Release Managers; Software Testers; Test Engineers; Technical Architects; Application Consultants</i>
30	Database Designers and Administrators (2521)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Telecommunications & Multimedia Sector– (Emerging Technologies Cluster)</u> <i>Database Specialists; Data Architects; Data Scientists; Business Data Analysts</i> <p><u>Further reference:</u> <i>PwC/MCMC Talent Gap Study for the Communications Sector in Malaysia (pg. 94 – 116)</i></p>
31	System Administrators (2522)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Telecommunications & Multimedia Sector–(Infrastructure for Wireless Technology and Emerging Technologies Clusters)</u> <i>Information Systems Maintenance Engineers; Value-Added Services (VAS) Engineers; Billing Specialists; IT Architects; Enterprise Applications Architects; Web and Mobility Developers; Cloud Computing Solution Architects</i> <p><u>Further reference:</u> <i>PwC/MCMC Talent Gap Study for the Communications Sector in Malaysia (pg. 94 – 116)</i></p> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector-(Information Technology Cluster)</u> <i>Customer Support Engineers, Customer Support Officers, Product Support Engineers, Product Support Officers; System Administrators; Solution Architects</i>

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No.	Critical Occupation (MASCO Code)	Additional Information
32	Computer Network Professionals (2523)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Telecommunications & Multimedia Sector– (Infrastructure for Wireless Technology Cluster)</u> <i>Network Analysts; Radio Network Planning Consultants; Network Performance Consultants</i> - <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector (Information Technology Cluster)</u> <i>IT Network Systems Engineers, Network Analysts, Network Specialists, Network System Engineers; Network Performance Consultants</i> <u>Further reference:</u> <i>MSC Malaysia Skills Competency Matrix 2.0</i> • Common types of qualifications: Degree in Computer Science; Information Technology; MIS; Engineering or equivalent • Common types of industry certification in ICT/Global business services sector: Cisco Certified Network Professional CCNP Certification, CompTIA Network+
33	Database and Network Professionals Not Elsewhere Classified (2529)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Telecommunications & Multimedia Sector– (Information and Network Security Cluster)</u> <i>Security Technology Specialists; Security Architects; Security Strategists; Network Penetration Testers; Application Security Specialists</i> <u>Further reference:</u> <i>PwC/MCMC Talent Gap Study for the Communications Sector in Malaysia (pg. 94 – 116)</i>
34	Lawyers (2611)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Financial Services Sector</u> <i>Legal Managers</i>

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35	Electronics Engineering Technicians (3114)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>Wafer Fabrication Technicians; Electronics Engineering Estimators</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Electrical & Electronics sector.
36	Mechanical Engineering Technicians (3115)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in these sectors: <ul style="list-style-type: none"> - <u>Electrical & Electronics Sector</u> <i>Engineering/Mechanical Technician</i> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Electrical & Electronics sector.
37	Environmental and Occupational Health Inspectors and Associates (3257)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Oil & Gas Sector (Tier 1: Production Sharing Employers)</u> <i>Health and Safety Inspectors; Industrial Safety Officers; Health, Safety and Environmental Coordinators</i> <p>Further reference: <i>PwC/TalentCorp Study on Talent Demand and Supply in the Oil & Gas Sector (pg. 107 – 174)</i></p> • Bottom-up evidence received indicates the occupation is hard-to-fill in the Oil & Gas sector.
38	Securities and Finance Dealers and Brokers (3311)	<ul style="list-style-type: none"> • Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> - <u>Financial Services Sector-(Investment Banking Cluster)</u> <i>Forex Traders; Fixed Income Traders; Treasury Dealers; Treasury Analysts</i>

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39	Credit and Loans Officers (3312)	<ul style="list-style-type: none"> Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> <u>Financial Services Sector-(Commercial/Islamic Banking Cluster)</u> <i>Loan Officers; Credit Analysts; Credit Officers; Credit Risk Officers</i>
40	Accounting Associate Professionals (3313)	<ul style="list-style-type: none"> Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector (Shared Services and Outsourcing Cluster)</u> <i>Assistant Officer (Accounts); Financial Supervisors; Account Assistants</i> Common types of qualifications: Diploma or degree in Accounting; Finance; Banking
41	Insurance Underwriters (3321)*	<ul style="list-style-type: none"> Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> <u>Financial Services Sector (Insurance/Takaful Cluster)</u> <i>Non-motor Underwriters; General Insurance Underwriters; Claims Underwriters; Claims Managers; Claims Officers</i>
42	Information and Communications Technology (ICT) User Support Technicians (3512)	<ul style="list-style-type: none"> Bottom-up evidence received includes the following job titles in this sector: <ul style="list-style-type: none"> <u>Information & Communications Technology (ICT) and Global Business Services (GBS) Sector (Information Technology Cluster)</u> <i>Help Desk Technicians; Computer/User Services Assistants; Technical Helpdesk Analysts; Technical Support</i> Common types of qualifications: Degree or higher in Computer Science; Information Technology; MIS; Engineering or equivalent Common types of industry certification: Certified Technical Support Specialist; Certified Technical Support Associate

Note: The Critical Occupations List (COL) is constructed based on the Malaysia Standard Classification of Occupations (MASCO) 2008

*Based on MASCO Code 3321-03, under MASCO Code 3321 (Insurance Agents)

Critical Occupations in the Oil & Gas Sector

Oil & Gas Tiers: (1) Production Sharing Employers; (2) Oil & Gas Services and Equipment

Table 2: Critical Occupations List – Oil & Gas Sector

No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	2114	Geologists and Geophysicists	Petroleum Geoscientists; Geoscientists; Geologists; Mudloggers; Oceanographers; Well Site Geologists; Operation Geologists; Reservoir Geologists; Sedimentologists; Structural Geologists; Subsurface Managers; Geomodellers; Geophysicists; Petrophysicists; Physical Oceanographers; Seismic Interpreters; Geological Specialists; Geophysical Specialists
2	2141	Industrial and Production Engineers	Automation Design – Electrical Engineers; Reliability Engineers; Process Development Engineers (Moulding)
3	2142	Civil Engineers	Structural Engineers; Civil/Structural/Structural Design Engineers; Drainage Design Engineers; Facilities Planning Specialists; Facilities (Equipment Design) Engineers; Facilities Project Managers; Foundation Engineers; Reliability and Safety Engineers; Construction Engineers
4	2144	Mechanical Engineers	Mechanical Design Engineers; Facilities Engineers; Mechanical Maintenance Engineers; Reliability and Safety Engineers; Rotating Equipment Engineers; Operations Managers; Operations Engineers; Platform Superintendents; Fabrication Engineers
5	2145	Chemical Engineers	Corrosion Engineers; Project Engineer/Managers; Product Quality Control/Assurances; Process Control Engineers; Terminal Managers

Table 2: Critical Occupations List – Oil & Gas Sector (continued)

No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
6	2146	Mining Engineers, Metallurgists and Related Professions	Marine Section Leaders; Technical Section Leaders; Subsurface Engineers (Petroleum); Subsea Engineers; Integrity Management Engineers; Petroleum Engineers; Drilling Engineers; Well Engineers; Completions Engineers; Production Engineers; Enhanced Oil Recovery (EOR) Engineers; Reservoir Engineers; Wellsite (Planning) Engineers; Production Technologists; Petroleum Economists; Facilities (Equipment Design) Engineers; Loss Control Engineers; Pipeline Corrosion Engineers; Wellsite Corrosion Engineers; Material (and Non-destructive Testing) Engineers; Welding Engineers; Instrumentation Engineers; Energy Engineers; Renewable Energy Engineers; Environment Engineers; Plan and Audit Engineering Design; Materials and Metallurgical Engineers; Pipeline/ Piping Engineers; Gas Processing Engineers; Hydraulics Engineers; Water Management Engineers; Marine Supervisors; Inspection Engineers; Product Design R&D Engineers; Operation Readiness and Assurance (OR&A) Leads; Pipeline Mechanical Engineers; Pipeline Project Engineers; Pipeline SCADA and Simulations Engineers; Pipe Stress Engineers
7	2149	Engineering Professionals Not Elsewhere Classified	Procurement Engineers; Commissioning Engineers; Research Engineers; Inspection (QA/QC) Engineers; Project Engineers;
8	2411	Accountants	Operations Accountants; Production Accountants; Chief Accountants; Project Accountants; Drilling Accountants; Management Accountants
9	1214	Business Services Managers	Technical Sales Engineers; Wireline Sales Engineers
10	3257	Environmental and Occupational Health Inspectors and Associates	Health and Safety Inspectors; Industrial Safety Officers; Health, Safety and Environmental Coordinators

Critical Occupations in the Electrical & Electronics Sector

Electrical & Electronics Clusters: (1) Automation; (2) Electronic Components; (3) Industrial Electronics; (4) Semiconductor; (5) LED; (6) Solar

Table 3: Critical Occupations List – Electrical & Electronics Sector

No.	MASCO	Critical Occupation	Job Titles
			<i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	2151	Electrical Engineers	Electrical Engineers; Electrical Illumination Engineers; Electromechanical Equipment Engineers; Process Engineers; Maintenance Engineers; Product Engineers; IC Design Engineers; Embedded System/Firmware Engineers; RF Engineers; Media Process Engineers; Wafer Fabrication Process Engineers; Test/Measurement Engineers; R&D Engineers (includes Product Design); Electrical Consultants; Protection Engineers
2	2152	Electronic Engineers	Electronics Engineers; Computer Engineers; Audio And Video Equipment Engineers; Electronics/ Semiconductors Engineers; Electronics/ Instrumentation Engineers; RF engineers; Embedded System/Firmware Engineers; Wafer Fabrication Engineers; Process Engineers; Maintenance Engineers; Design Engineers; Product Engineers; Test Engineers; IC Design Engineers; Media Process Engineers; Wafer Fabrication Process Engineers; Test/Measurement Engineers; R&D Engineers (includes Product Design); Hardware Design Engineers; User Experience Engineers; Semiconductor Packaging Engineers; IC Circuit Designers; IC Package Assembly Process Engineers; Component Design Engineers; IP logic Design Engineers; Optoelectronics Engineers
3	2182	Manufacturing Professionals	Manufacturing Specialists; Manufacturing Executives; Quality Assurance Executives; Production Executives; Warehouse Executives; Boiler Superintendents; Health and Safety Executive and Managers
4	1213	Policy and Planning Managers	Project Managers; Project Leaders; Program Managers
5	1330	Information and Communications Technology (ICT) Services Managers	Strategic Program Managers
6	2120	Mathematicians, Actuaries and Statisticians	Data Scientists; Data Analysts

Table 3: Critical Occupations List – Electrical & Electronics Sector (continued)

No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
7	2141	Industrial and Production Engineers	Process Engineers; Preventive Maintenance (Facility); Packaging Engineers; Facilities Competent Engineers; Industrial Engineers; Automation Engineers; SCADA Engineers
8	2144	Mechanical Engineers	Mechanical Engineers; Engineering Technologists; Mechanical Technologists; Industrial Machinery and Tools Engineers; Heating, Ventilation, Air-conditioning and Refrigeration Engineers; Maintenance Engineers; Product Engineers; Media Process Engineers; Industrial Machinery and Tools Engineers; Process Engineers; Metrology Equipment Engineers; R&D Engineers
9	2149	Engineering Professionals Not Elsewhere Classified	Photonic Engineers; Material Engineers; Unit Process Design (UPD) Engineers; Plasma Enhance Chemical Vapour Deposition Engineers; Sputter Process Engineers; Module Characterisation Engineers; Aerospace Engineers; Sputter Equipment Engineers
10	2511	System Analysts	Computer Analysts; Business (Information Technology) Analysts
11	2512	Software Developers	Computer Programmers; Systems Programmers; Programmers (Analyst); Multimedia Programmers; Information Technology Researchers; Software Engineers; Software Design Engineers; Root Cause Failure Analysis (RCFA) Engineers; SAP IT and Finance Applications Developers; Product Development Engineers
12	2514	Applications Programmers	CAD Engineers
13	3114	Electronics Engineering Technicians	Electronics Engineering Technicians; Electronics Engineering Estimators; Wafer Fabrication Technicians
14	3115	Mechanical Engineering Technicians	Engineering/ Mechanical Technicians; Hydraulic Hose Technicians; Wafer Fabrication Technicians
15	1214	Business Services Managers	Sales Engineers; Marketing Engineers

Critical Occupations in the Telco & Multimedia Sector

Telco Clusters: (1) Infrastructure for wireless technology; (2) Infrastructure for fixed line technology; (3) Information & network security; (4) Emerging technologies (cloud computing & big data analytics)

Table 4: Critical Occupations List – Telco & Multimedia Sector			
No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	1330	Information and Communications Technology (ICT) Services Managers	Network Strategists; Technology Strategists; Enterprise Convergence Strategists; IT Project Managers; Infrastructure Specialists; Database Specialists; Software Developers; Network Performance Managers; Network Operations Managers; Network Deployment Managers; Chief Information Security Officers; Network Security; Information Systems Maintenance Engineers; Access Control Specialists; Network Security Software Developers; Data Architects; Business Data Analysts; Production And Operation/ Communications Managers; Information Systems Managers; Information Technology Managers; Computer Services Managers; Data Processing Managers
2	2529	Database and Network Professionals Not Elsewhere Classified	Security Technology Specialists; Security Architects; Security Strategists; Network Penetration Testers; Application Security Specialists
3	2521	Database Designers and Administrators	Database Specialists; Data Architects; Data Scientists; Business Data Analysts
4	1214	Business Services Managers	Production and Operation Managers; Business Services/Development Managers
5	2120	Mathematicians, Actuaries and Statisticians	Data Scientists; Predictive Analysts; Data Mining Analysts
6	2413	Financial Analysts	Pricing Analysts
7	2421	Management and Organisation Analysts	Market Research/ Business Analysts; Strategy Analysts
8	2511	Systems Analysts	Systems/Computer Analysts; Business (Information Technology) Analysts

Table 4: Critical Occupations List – Telco & Multimedia Sector (continued)

No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
9	2514	Applications Programmers	Software Developers; Systems Programmers
10	2522	System Administrators	Systems Administrators; Information Systems Maintenance Engineers; Value-added Services (VAS) Engineers; Billing Specialists; IT Architects; Enterprise Applications Architects; Web and Mobility Developers; Cloud Computing Solution Architects; Cloud Technology Specialists; Cloud Planners
11	2523	Computer Network Professionals	Network Analysts; Radio Network Planning Consultants; Network Performance Consultants
12	2153	Telecommunications Engineers	Network Architects/ Designers/ Planners/ Testers; Wireless Network Engineers; Radio Optimisation and Capacity Engineers; Core Network Service Assurance Engineers; Data Network Engineers; Network Deployment Managers; Site and Construction Engineers; Network Implementation and Construction Engineers; Network Performance Managers; Network Quality Engineers; Value-added Services (VAS) Engineers; Transmission Networks; IP Engineers; Network and System Engineers; Telecommunications Consultants

Critical Occupations in the Information and Communications Technology (ICT) & Global Business Services (GBS) Sector

ICT & GBS Clusters: (1) Creative multimedia; (2) System design & development; (3) Information technology; (4) Shared services & outsourcing

Table 5: Critical Occupations List – ICT & GBS Sector			
No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	2512	Software Developers	SAP Application Developers
2	2514	Applications Programmers	Computer Programmers; Communications Programmers; Systems Programmers; Software QA Engineers; Multimedia Programmers; Database Programmers; Programmers (Analyst); Information Technology Researchers; .NET Programmers; Java Programmer; PHP Programmer; C/C++ Programmer; Application Developers; Application Engineers; Software Engineers; Software Programmers; Game Engine Programmers; User Interface (UI)/ Gameplay Coders
3	3313	Accounting Associate Professionals	Assistant Officers (Account); Financial Supervisors; Account Assistants
4	3512	Information and Communications Technology (ICT) User Support Technicians	Help Desk Technicians; Computer/User Services Assistants; Technical Helpdesk Analysts; Technical Support
5	2166	Graphic and Multimedia Designers	Web Designers; Graphics and Sound Specialists; Computer Specialists; Systems/Computer Designers; Graphic Designers; Digital Artists; Animators; 3D Modellers; Visual Effects Artists; 2D Animators; 3D Artists; Animation Directors; Animation Producers; Animation Supervisors; Creative Artists; Layout Artists; Lighting Artists
6	2152	Electronic Engineers	Computer Engineers; Audio and Video Equipment Engineers; Electronics/ Semiconductors Engineers; Electronics/ Instrumentation Engineers; System Architects; Structural Designers; Pre-Silicon Validation Engineers; Physical Design Engineers; Physical Design Verification Engineers; Signal Integrity Engineers; Register-transfer Level (RTL) Designers
7	2423	Personnel and Career Professionals	Human Resource (HR) Analysts; HR Assistants; HR Consultants; Talent Acquisition Consultants
8	2523	Computer Network Professionals	IT Network Systems Engineers; Network Analysts; Network Specialists; Network System Engineers; Network Performance Consultants

Table 5: Critical Occupations List – ICT & GBS Sector (continued)

No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
9	2519	Software and Application Developers and Analysts Not Elsewhere Classified	Product Assurance Engineers; QA Analysts; QA Executives; Quality Engineers; Release Managers; Software Testers; Test Engineers; Technical Architects; Application Consultants
10	2522	System Administrators	Customer Support Engineers; Customer Support Officers; Product Support Engineers; Product Support Officers; System Administrators; Solution Architects
11	1330	Information and Communications Technology Services Managers	Production and Operation/ Communications Managers; Information Systems Managers; Information Technology (IT) Managers; Computer Services Managers; Data Processing Managers
12	2120	Mathematicians, Actuaries and Statisticians	Data Scientists; Data Modellers; Data Analysts; Data Miners; Big Data and Analytics; Analytical Consultants
13	2182	Manufacturing Professionals	Supply Chain/ Procurement Specialists; Presales Storage Consultants; Product Planners
14	2411	Accountants	Accountants; Auditors; Tax Consultants; Liquidators; Chartered Accountants; Transaction Monitoring Managers; Account Receivable (AR) Executives; Account Payable (AP) Executives; E-payment Account Managers
15	2413	Financial Analysts	Operational Risk Analysts; Financial Services Leaders; Solutions Consultants
16	2511	Systems Analysts	Computer Analysts; Business (Information Technology) Analysts; JD-Edwards (JDE) Consultants; RPG Programmers; SAP Consultants
17	1215	Administrative Managers	Contact Centre Managers

Critical Occupations in the Financial Services Sector

Financial Services Clusters: (1) Commercial/Islamic Banking; (2) Investment Banking; (3) Insurance/Takaful

Table 6: Critical Occupations List –Financial Services Sector			
No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	1211	Finance Managers	Financial Reporting Analysts; Tax Managers; Credit Risk Managements; Financial Controllers
2	1214	Business Services Managers ¹ <i>(Includes Compliance Managers)</i>	Production and Operation/Business Managers; Business Services/Development Managers; Anti-Money Laundering Specialists; Compliance Officers; Shariah Compliance Officers; Compliance Analysts
3	2411	Accountants	Accountants/ Chartered Accountants; Auditors; Tax Consultants; Tax Managers; Adjusters
4	2412	Financial and Investment Advisers	Sales Managers; Sales Analysts; Client Relationship Managers; Wealth Managers; Financial Planners; Corporate Finance Advisors; High-net-worth Client Advisors
5	2413	Financial Analysts ²	Research Analysts; Debt Analysts; Equity Analysts; Investment Analysts; Financial Officers; Risk Management Officers; Market Risk Officers; Credit Risk Officers; Operational Risk Officers; Risk Manager; Risk Analysts; Risk Modellers
6	2423	Personnel and Career Professionals	Human Resource Professionals
7	2511	Systems Analysts	Computer and System Administrators; System Analysis Engineers
8	2514	Applications Programmers	Software Analysts
9	3312	Credit and Loans Officers	Loan Officers; Credit Analysts; Credit Officers; Credit Risk Officers

Table 6: Critical Occupations List –Financial Services Sector (continued)

No.	MASCO	Critical Occupation	Job Titles
			<i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
10	2611	Lawyers	Legal Managers
11	1330	Information and Communications Technology (ICT) Services Managers	Software Analysts; Data Warehouse Specialists/ Modellers/ Scientists; Digital Banking/ Internet Technology Specialists; Integration Technology Specialists; IT Security Specialists; Big Data/ Hadoop Engineers; Cloud Specialists; PMO Managers; MIS Specialists
12	2120	Mathematicians, Actuaries and Statisticians	Appointed Actuaries; Pricing Actuaries; Valuation Actuaries
13	3311	Securities and Finance Dealer and Brokers	Forex Traders; Fixed Income Traders; Treasury Dealers; Treasury Analysts
14	3321-03	Insurance Underwriters ³	Non-motor Underwriters; General Insurance Underwriters; Claims Underwriters; Claims Managers; Claims Officers;
15	2431	Advertising and Marketing Professionals ⁴	Marketing Communications Specialists
16	1223	Research and Development Managers ⁵	Trade Product Specialists; Product Managers; Islamic Product Managers; Credit and Lending Product Developers

¹ Also includes Compliance Managers, 1214-07 (MASCO 2013)

² Also includes Risk Operation Analysts, 2413-04 (MASCO 2013)

³ Based on MASCO 2013 (MASCO Code 3321: Insurance Agents)

⁴ Also includes Marketing Officers

⁵ Refers specifically to Product Development Managers, 1223-02 (MASCO 2013)

Critical Occupations in the Accounting Sector

Table 7: Critical Occupations List – Accounting Sector

No.	MASCO	Critical Occupation	Job Titles
			<i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	1211	Finance Managers	Finance Directors; Financial Controllers; Chief Financial Controllers
2	2411	Accountants	Auditors; Accountants; Tax Consultants; Tax Managers; Technical Managers (Accounting)
3	2413	Financial Analysts	Fraud Specialists; Transfer Pricing; Fraud and Investigation Consultants

APPENDIX

Description of Critical Occupations in Table 1

1. Finance Managers (1211)

MASCO Description

Finance managers plan, direct and coordinate the financial operations and participates in formulating the financial policy within a government agency, corporate business, or organisation.

[\(Back to COL\)](#)

2. Policy and Planning Managers (1213)

MASCO Description

Policy and planning managers plan, direct and coordinate policy advice and strategic planning within a government agency, corporate business, or organisation.

[\(Back to COL\)](#)

3. Business Services Managers (1214)

MASCO Description

Business services managers plan, direct and coordinate the business services activities within a government agency, corporate business, or organisation.

[\(Back to COL\)](#)

4. Administrative Managers (1215)

MASCO Description

Administrative managers plan, direct and coordinate supportive services such as record-keeping, mail distribution, telephone operator/receptionist and other office support services within a government agency, corporate business, or organisation.

[\(Back to COL\)](#)

5. Research and Development Managers (1223) – Includes Product Development Managers

MASCO Description

Research and development managers plan, direct and coordinate the research and development activities within a government agency, corporate business, or organisation.

[\(Back to COL\)](#)

6. ICT Services Managers (1330)

MASCO Description

ICT Services Managers plan, direct and coordinate the acquisition, development, maintenance and use of computer and telecommunications systems within government agency, corporate business, or organisation under the broad guidance of directors and chief executive.

[\(Back to COL\)](#)

7. Geologists and Geophysicists (2114)

MASCO Description

Geologists and geophysicists conduct research, improve or develop concepts, theories and operational methods, or apply scientific knowledge relating to geology and geophysics in such fields as oil, gas and mineral exploitation, water conservation, civil engineering, telecommunications and navigation.

[\(Back to COL\)](#)

8. Mathematicians, Actuaries and Statisticians (2120)

MASCO Description

Mathematicians, actuaries and statisticians conduct research and improve or develop mathematical, actuarial and statistical concepts, theories and operational methods and techniques and advise on or engage in their practical application in such fields as engineering, business and social and other sciences.

[\(Back to COL\)](#)

9. Industrial and Production Engineers (2141)

MASCO Description

Industrial and production engineers plan, design, organise and supervise the operation of industrial production.

[\(Back to COL\)](#)

10. Civil Engineers (2142)

MASCO Description

Civil engineers plan, design, organise and supervise the construction and operation of civil engineering works.

[\(Back to COL\)](#)

11. Mechanical Engineers (2144)

MASCO Description

Mechanical engineers conduct research and advice on, design, and direct production of machines, machinery and industrial plant, equipment and systems, and advise on and direct their functioning, maintenance and repairs, or study and advice on technological aspects of particular materials, products or processes.

[\(Back to COL\)](#)

12. Chemical Engineers (2145)

MASCO Description: Chemical engineers conduct research and develop, design and advise on and direct commercial-scale chemical processes and production of various substances and items such as crude oil, petroleum derivatives, food and drink products, medicaments, or synthetic materials, and direct maintenance and repair of industrial plant, or study and advise on technological aspects of particular materials, products or processes.

[\(Back to COL\)](#)

13. Mining Engineer, Metallurgists, Related Professions (2146)

MASCO Description: Mining engineers, metallurgists and related professionals conduct research, design and develop and maintain commercial-scale methods of extracting metals from their ores, or minerals, water, oil or gas from the earth and of developing new alloys, ceramic and other materials, or study and advise on technological aspects of particular materials, products or processes.

[\(Back to COL\)](#)

14. Engineering Professionals Not Elsewhere Classified (2149)

MASCO Description

This unit group covers Engineering Professional (Excluding Electrotechnology) not classified elsewhere in Minor Group 214: Engineering Professional (Excluding Electrotechnology). For instance, here should be classified those who engaged in conducting research, advising on or developing industrial efficiency of production, quality control, and those who study and advise on technological aspects of particular materials, products and manufacturing processes.

[\(Back to COL\)](#)

15. Electrical Engineers (2151)

MASCO Description

Electrical engineers conduct research and advise on, design, develop and supervise the manufacture, installation, operation and maintenance of equipment, machines and systems for the generation, distribution, utilisation and control of electric power.

[\(Back to COL\)](#)

16. Electronic Engineers (2152)

MASCO Description

Electronics engineers design, develop, adapt, test and maintain electronic components, circuits and systems used for computer systems, communications systems and industrial applications.

[\(Back to COL\)](#)

17. Telecommunications Engineers (2153)

MASCO Description

Telecommunications engineers design, develop, adapt, test and maintain electronic components, circuits and systems used for communications systems and industrial applications.

[\(Back to COL\)](#)

18. Graphic and Multimedia Designers (2166)

MASCO Description

Graphic and multimedia designers conduct research, improve or develop graphic computing concepts and operational methods, and advise on or engage in their practical application.

[\(Back to COL\)](#)

19. Manufacturing Professionals (2182)

MASCO Description

Manufacturing professionals conduct research and improve or develop concepts, theories and operational methods, or apply existing knowledge concerning the production of food, paper, sawmill, warehouse as well as quality assurance.

[\(Back to COL\)](#)

20. Accountants (2411)

MASCO Description

Accountant plan, organise and administer accounting systems for individuals establishment. Some occupations classified here examine and analyse the accounting and financial records of individuals establishments to ensure accuracy and compliance with established accounting standards and procedures.

[\(Back to COL\)](#)

21. Financial and Investment Advisers (2412)

MASCO Description: Financial and investment advisers develop financial plans for individual organisations and invest and manage funds on their behalf.

[\(Back to COL\)](#)

22. Financial Analysts (2413)

MASCO Description: Financial analysts conduct quantitative analyses of information affecting investment programs of public or private institutions.

[\(Back to COL\)](#)

23. Management and Organisation Analysts (2421)

MASCO Description

Management and organisation analysts assist organisations to achieve greater efficiency and solve organisational problems. They study organisational structures, methods, systems and procedures.

[\(Back to COL\)](#)

24. Personnel and Career Professionals (2423)

MASCO Description

Personnel and careers professionals provide professional business services related to personnel policies such as employee recruitment or development, occupational analyses and vocational guidance.

[\(Back to COL\)](#)

25. Advertising and Marketing Professionals (2431)

MASCO Description

Advertising and marketing professionals improve, advice or apply operational methods relating to marketing strategy, sales, advertising, promotion and pricing activities.

[\(Back to COL\)](#)

26. Systems Analyst (2511)

MASCO Description: *Systems analysts conduct research, analyse and evaluate client information technology requirements, procedures or problems, and develop and implement proposals, recommendations, and plans to improve current or future information systems.*

[\(Back to COL\)](#)

27. Software Developers (2512)

MASCO Description: *Software developers research, analyse and evaluate requirements for existing or new software applications and operating systems, and design, develop, test and maintain software solutions to meet the requirements.*

[\(Back to COL\)](#)

28. Applications Programmers (2514)

MASCO Description

Applications programmers write and maintain programmable code outlined in technical instructions and specifications for software applications and operating systems.

[\(Back to COL\)](#)

29. Software and App. Developers & Analysts Not Elsewhere Classified (2519)

MASCO Description

This unit group covers professionals not classified elsewhere in minor group 251, Software and Applications Developers and Analysts. For instance, here should be classified those professionals specialising in quality assurance including software testing.

[\(Back to COL\)](#)

30. Database Designers and Administrators (2521)

MASCO Description

Database designers and administrators design, develop, control, maintain and support the optimal performance and security of databases.

[\(Back to COL\)](#)

31. System Administrators (2522)

MASCO Description

Systems administrators develop, control, maintain and support the optimal performance and security of information technology systems.

[\(Back to COL\)](#)

32. Computer Network Professionals (2523)

MASCO Description: Computer network professionals research, analyse and recommend strategies for network architecture and development, implement, manage, maintain and configure network hardware and software, and monitor, troubleshoot and optimise performance.

[\(Back to COL\)](#)

33. Database and Network Professionals Not Elsewhere Classified (2529)

MASCO Description: This unit group covers database and networking professionals not elsewhere classified in Minor Group 252: Database and Network Professionals.

[\(Back to COL\)](#)

34. Lawyers (2611)

MASCO Description

Lawyers give clients legal advice on a wide variety of subjects and plead cases or conduct prosecutions in courts of justice, or instruct barristers or advocates to plead in higher courts of justice.

[\(Back to COL\)](#)

35. Electronics Engineering Technicians (3114)

MASCO Description

Electronics engineering technicians, normally under the direction and supervision of electronics engineers, perform technical tasks connected with electronic engineering research, as well as with the design, manufacture, assembly, construction, operation, maintenance and repair of electronic equipment and electromechanical systems.

[\(Back to COL\)](#)

36. Mechanical Engineering Technicians (3115)

MASCO Description

Mechanical engineering technicians perform technical tasks, normally under the direction and supervision of mechanical engineers, contributory to design, development, manufacture, construction, installation, maintenance and repair of mechanically functioning plant and equipment.

[\(Back to COL\)](#)

37. Environmental and Occupational Health Inspectors and Associates (3257)

MASCO Description

Environmental and Occupational health inspectors and associates on behalf of the government or industrial and other enterprises, inspect places of works on the grounds of occupational safety, and safety of production processes, or of goods produced, used or sold, and to ensure compliance with health and environment protection rules and regulations as well as with the quality standards and specifications of manufacturers.

[\(Back to COL\)](#)

38. Securities and Finance Dealers and Brokers (3311)

MASCO Description: Securities and finance dealers and brokers buy and sell securities, stocks, bonds and other financial instruments, and deal on the foreign exchange on spot or on futures markets, on behalf of their own company or for customers on a commission basis and recommend transactions to clients or senior management.

[\(Back to COL\)](#)

39. Credit and Loans Officers (3312)

MASCO Description: Credit and loan officers analyse and evaluate financial information on applications for credit and loans and determine approval or disapproval of the client for the credit or loan or recommend to management approval or disapproval.

[\(Back to COL\)](#)

40. Accounting Associate Professionals (3313)

MASCO Description: Accounting associate professionals maintain complete records of financial transactions of an undertaking and verify accuracy of documents and records relating to such transactions.

[\(Back to COL\)](#)

41. Insurance Underwriters (3321-03)

MASCO Description: Insurance representatives advise on and sell life, accident, automobile, liability, endowment, fire, marine and other types of insurance to new and existing clients.

Note: Insurance Underwriters is under MASCO 3321 (Insurance Agents)

[\(Back to COL\)](#)

42. ICT User Support Technicians (3512)

MASCO Description: Information and communications technology user support technicians provide technical assistance to users, either directly or by telephone, e-mail or other electronic means, including diagnosing and resolving issues and problems with software, hardware, computer peripheral equipment, networks, databases and the Internet, and providing guidance and support in the deployment, installation and maintenance of systems.

[\(Back to COL\)](#)