

**CSC**

*Critical Skills Monitoring  
Committee*

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**CRITICAL  
OCCUPATIONS LIST  
2016/2017**

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## MALAYSIA'S CRITICAL OCCUPATIONS LIST (COL) 2016/2017

### *The Critical Occupations List (COL) 2016/2017*

The **Critical Occupations List (COL)** shows occupations that are **skilled, sought-after** and **strategic** across ten key sectors in Malaysia (**Table 1**).

Table 1: Critical Occupations List – Full List (48 Occupations)		
No.	Critical Occupation (MASCO Code)	Additional Information
1	Managing Directors and Chief Executives (1121)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Chief Executive Officer, Chief Operating Officer, Chief Legal Officer, Chief Technical Officer, Chief Medical Officer, Director, Senior Director, Executive Director, Deputy Executive Director, Managing Director, Chairperson, Director-General, General Manager, Operations Manager, Administrator, Chief Information Officer</li> </ul>
2	Finance Managers (1211)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Finance Manager, Account Manager, Audit Manager, Audit and Risk Management Manager, Chief Financial Officer, Credit Manager, Insurance Manager, Tax Managers, Underwriting Manager, Financial Crime Compliance Manager, Director of Risk, Claim Manager, Finance Director</li> </ul>
3	Human Resource Managers (1212)	<p>ALL job titles within this occupation are included, for example:</p> <ul style="list-style-type: none"> <li>Human Resource Manager, Training Manager, Industrial Relations Manager, Occupational Safety and Health Manager, Personnel Manager, Recruitment Manager, Learning &amp; Organization Development Manager, Compensation &amp; Benefits Manager, Talent and Organization Performance Manager</li> </ul>
4	Policy and Planning Managers (1213)	<p>ALL job titles within this occupation are included, for example:</p> <ul style="list-style-type: none"> <li>Policy and Planning Manager, Policy and Research Manager, Strategic Planning Manager, Corporate Planning Manager, Project Planning Manager, Project Leader, Programme Manager, Senior Manager (Regulatory Affairs)</li> </ul>
5	Business Services Managers (1214)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Production and Business Operation Manager, Business Services Development Manager, Production Controller, Compliance Manager, Country Manager</li> </ul>

**Table 1: Critical Occupations List – Full List (48 Occupations)**

No.	Critical Occupation (MASCO Code)	Additional Information
6	Sales and Marketing Managers (1221)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Sales Manager, Marketing Manager, Market Research Manager, Product Manager, Brand Manager, Sales and Marketing Manager</li> </ul>
7	Advertising and Public Relations Managers (1222)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Communications Manager, Public Relations Manager, Customer Service Manager, Contact Centre Manager, Call Centre Manager, Contact Centre Team Leader Manager</li> </ul>
8	Research and Development Managers (1223)	<p>ALL job titles within this occupation are included, for example:</p> <ul style="list-style-type: none"> <li>• Research and Development Manager, Product Development Manager, Research Manager</li> </ul>
9	Manufacturing Managers (1321)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Production and Operation Manager, Factory Manager, Mechanical Manager, Manufacturing Manager</li> </ul>
10	Mining Managers (1322)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Production and Operation Manager (Oil and gas extraction), Oil and Gas Extraction Manager, Mining Manager, Senior Project Manager (Engineering, Procurement, Construction, Installation &amp; Commissioning), Drilling, Well Stimulation, Wellbore &amp; Completion Manager</li> </ul>
11	Supply, Distribution and Related Managers (1324)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Transport Manager, Shipping Manager, Supply Manager, Warehouse Manager, Distribution Manager, Logistics Manager, Supplier Development Manager, Commercial Fleet Manager</li> </ul>

**Table 1: Critical Occupations List – Full List (48 Occupations)**

No.	Critical Occupation (MASCO Code)	Additional Information
12	Information and Communications Technology (ICT) Managers (1511)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"><li>• Production and Operation Manager (Communications), Information Technology (IT) Manager, Application Development Manager, ICT Development Manager, Network Manager, Database Manager, Computer Security Manager, IT Project Manager, IT Infrastructure Manager, IT Delivery Manager, Creative Multimedia Manager, Technology Transformation Manager, Security Operations Centre (SOC) Manager</li></ul>
13	Geologists and Geophysicists (2114)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"><li>• Geophysicist, Oil Geologist, Mining Geologist, Petroleum Geoscientist</li></ul>
14	Mathematicians, Actuaries and Statisticians (2121)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"><li>• Data Scientist, Data Analyst, Data Mining Analyst, Predictive Analyst, Actuarial Science Mathematician, Appointed Actuary, Pricing Actuary, Product Actuary, Chief Actuary</li></ul>
15	Industrial and Production Engineers (2141)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"><li>• Industrial Engineer, Systems Analyst (Except Computers), Planning Engineer, Cost Evaluation Engineer, Plant Engineer, Package Design Engineer, Analog Integrated Circuit (IC) Package Design Engineer, Material Specialist, Industrial Automation Engineer, Process Development Engineer, Fibre Reinforced Plastic (FRP) Production Engineer</li></ul>
16	Mechanical Engineers (2144)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"><li>• Machinery and Tools Industrial Engineer, Instruments Mechanical Engineer, Jet Engine Engineer, Automotive Mechanical Engineer, Welding Technologist, Aerospace Mechanical Engineer, Aeronautics Mechanical Engineer, Aero-Material Component Engineer, Technology Technical Engineer, Equipment Engineer, Offshore Equipment Engineer, Instrumentation Engineer, Mechanical Engineer (Design), Mechanical Engineer (Rotating Equipment)</li></ul>

**Table 1: Critical Occupations List – Full List (48 Occupations)**

No.	Critical Occupation (MASCO Code)	Additional Information
17	Mining Engineers, Metallurgists and Related Professionals (2146)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Natural Gas Mining Engineer, Metallurgist, Petroleum and Natural Gas Engineer, Drilling Engineer, Pipeline Engineer</li> </ul>
18	Engineering Professionals (Excluding Electrotechnology) Not Elsewhere Classified (2149)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Project Engineer, Process Engineer, Quality Assurance Engineer, Quality Control Engineer, Research Engineer, Materials Engineer, Safety Engineer, Quality Engineer, Commissioning Engineer, Photonic Engineer, Head of Engineering, Method &amp; Process Engineer, Supplier Quality Engineer (Aerospace), Non-Destructive Testing (NDT) Specialist, Sustainable Material &amp; Renewable Specialist</li> </ul>
19	Electrical Engineers (2151)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Electrical Testing Engineer, Power Generation Engineer, Embedded System/Firmware Engineer, Power Supply Design Engineer</li> </ul>
20	Electronic Engineers (2152)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Electronics Engineer (Computer Hardware Design) Computer Engineer (Software), Systems Engineer, Information Technology Engineer, Semiconductor Electronics Engineer, Instrumentation Engineer, Pre-Silicon Validation Engineer, Printed Circuit Board (PCB) Design Engineer, Product Characterization Engineer, Computer-aided Design (CAD)/Computer-aided Manufacturing (CAM) Engineer, Product Development Engineer, Test Development Engineer, Wirebond Engineers, Leadframe Engineers, Field Application Engineer, Board Support Package (BSP) Embedded Engineer, Surface Mount Technology (SMT) Engineer</li> </ul>
21	Telecommunications Engineers (2153)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Telecommunications Engineer (Signal Systems), Telecommunications Engineer (Microwave), Broadcast Engineer, Data Network Engineer, Value-added Service (VAS) Engineer, Network Architect, Network Designer, Network Planner, Network Optimisation Engineer, Transmission Network Engineer, IP Engineer, Network and Systems Engineer, Network Tester, Network Performance Engineer, Site and Construction Engineer (Telecommunications)</li> </ul>

**Table 1: Critical Occupations List – Full List (48 Occupations)**

No.	Critical Occupation (MASCO Code)	Additional Information
22	Building Architects (2161)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Architect, Interior Architect, Building Architect</li> </ul>
23	Cartographers and Surveyors (2165)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Marine Surveyor, Land Surveyor, Railway Surveyor, Survey Engineer</li> </ul>
24	Graphic and Multimedia Designers (2166)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Web Designer, Graphic Designer, Designer, Digital Artist, Animator, Screenwriter, 3D Artist, 3D Modeller</li> </ul>
25	Ships Engineers (2171)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Aircraft Engineer, Aircraft Design Engineer, Aeronautical Engineer, Structural &amp; Stress Engineers, Tooling Design Engineer</li> </ul>
26	Aircraft Pilots and Related Professionals (2173)	<p>The following job title within this occupation is included:</p> <ul style="list-style-type: none"> <li>• Pilot</li> </ul>
27	Manufacturing Professionals (2182)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Manufacturing Executive, Quality Assurance Executive, Quality Control Executive, Maintenance Executive, Procurement Engineer, Manufacturing Quality Controller Executive, Product Quality Controller</li> </ul>
28	University and Higher Education Professional Teachers (2311)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• University Lecturer, University Lecturer (Clinical – Medicine), University Lecturer (IT), University Lecturer (Engineering), University Lecturer (Actuarial Science)</li> </ul>

**Table 1: Critical Occupations List – Full List (48 Occupations)**

No.	Critical Occupation (MASCO Code)	Additional Information
29	Accountants (2411)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Certified Accountant, Tax Accountant, Tax Consultant, Liquidator, Management Accountant, Bank Accounting Analyst, Financial Controller, Auditor, Audit and Risk Assessment Executive, Project Accountant, Compliance Analyst, GST Specialist</li> </ul>
30	Financial and Investment Advisers (2412)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Corporate Financial Adviser, Financial and Investment Adviser, E-Commerce Adviser, Bank Executive Officer, Financial Planner, Investment Consultant, Finance Executive</li> </ul>
31	Financial Analysts (2413)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Finance Analyst, Fraud Specialist, Risk Operation Analyst, Pricing Analyst, Research Analyst, Investment Analyst, Rating Analyst, Financial Condition Management Analyst</li> </ul>
32	Management and Organization Analysts (2421)	<p>ALL job titles within this occupation are included, for example:</p> <ul style="list-style-type: none"> <li>• Organization and Methods Analyst, Research and Information Analyst, Operation Research Analyst, Management Consultant, Business Consultant, Strategy Analyst,</li> </ul>
33	Information and Communications Technology (ICT) Sales Professionals (2434)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Product Support Engineer, Product Development Engineer, IT Sales Engineer, Customer Support Representative, Engineering and Technical Operations</li> </ul>
34	Systems Analysts (2511)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Electronic Data Processing Analyst, Management Information Systems (MIS) Analyst, Computer Systems Analyst, IT Systems Consultant, IT Business Analyst, IT Security Analyst, .Net Consultant, .Net Application Consultant, Java Consultant, IT System Analyst (JDE), Enterprise Systems Specialist, IT Specialist (SAP), Integrated Circuit (IC) Designer (IT), Technical Helpdesk Analyst</li> </ul>
35	Software Developers (2512)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>• Software Developer, Software Designer, Software Engineer, Design Engineer, Application Developer (.Net), Java Developer, Hypertext Preprocessor (PHP) Developer, System Architect (IT), Software Analyst, OpenText Developer, BIOS Engineer</li> </ul>

**Table 1: Critical Occupations List – Full List (48 Occupations)**

No.	Critical Occupation (MASCO Code)	Additional Information
36	Applications Programmers (2514)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Systems Programmer, Analyst Programmer, Applications Programmer, .Net Programmer, C/C++ Programmer, Cobol Programmer, Java Programmer, Hypertext Preprocessor (PHP) Programmer, Android/iOS Programmer, Animation Programmer, Computer Games Programmer, User Interface (UI)/ Gameplay Coders, Game Engine Programmers, Computer Infrastructure Specialist</li> </ul>
37	Software and Applications Developers Not Elsewhere Classified (2519)	<p>ALL job titles within this occupation are included, for example:</p> <ul style="list-style-type: none"> <li>Quality Assurance Analyst (IT), Test Engineer (IT), Solution Architect (IT), Software Quality Assurance Engineer (IT), Application Consultant</li> </ul>
38	Databases and Administrators (2521)	<p>ALL job titles within this occupation are included, for example:</p> <ul style="list-style-type: none"> <li>Database Architect, Database Analyst, Database Administrator, Database Designer, Computer Auditor, Oracle Database Engineer, Structured Query Language (SQL) Database Engineer, Data Warehouse Specialist</li> </ul>
39	Systems Administrators (2522)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Project Coordinator (IT), Computer Support Engineer, System Engineer (IT), SAP Application Administrator, Cloud Computing Solution Architect, Web and Mobility Developer</li> </ul>
40	Computer Network Professionals (2523)	<p>ALL job titles within this occupation are included, for example:</p> <ul style="list-style-type: none"> <li>Network Analyst, Network Services Consultant, Network Administrator, Network Infrastructure Administrator, Network Engineer, Network Systems Engineer, Cloud Specialist, Radio Network Planning Consultant, Network Performance Consultant, IT Network System Engineer</li> </ul>
41	Database and Network Professionals Not Elsewhere Classified (2529)	<p>The following job titles within this occupation are included:</p> <ul style="list-style-type: none"> <li>Digital Forensic Specialist, Security Specialist (IT), IT Security Architect, Penetration Testers</li> </ul>



**Table 1: Critical Occupations List – Full List (48 Occupations)**

No.	Critical Occupation (MASCO Code)	Additional Information
42	Film, Stage and Related Directors and Producers (2844)	The following job titles within this occupation are included: <ul style="list-style-type: none"><li>• Multimedia Producer, Motion Picture Producer, Television Producer, Scriptwriter</li></ul>
43	Electrical Engineering Technicians (3113)	The following job titles within this occupation are included: <ul style="list-style-type: none"><li>• Electrical Technician, Debug Technician</li></ul>
44	Electronics Engineering Technicians (3114)	The following job titles within this occupation are included: <ul style="list-style-type: none"><li>• Electronics Technician, Test Technician, Computer-aided Design (CAD)/Computer-aided Manufacturing (CAM) Technician</li></ul>
45	Mechanical Engineering Technicians (3115)	The following job titles within this occupation are included: <ul style="list-style-type: none"><li>• Aerospace (Mechanical) Engineering Technician, Aeronautical Engineering Technician, Mechanical Engineering Technician (Industrial Machinery and Tools), Aeronautical (Mechanical) and Equipment Engineering Assistant, Computer Numerical Control (CNC) Technician, Welding Technician, Hydraulic Workover Unit Supervisor</li></ul>
46	Aircraft Technicians (3151)	The following job titles within this occupation are included: <ul style="list-style-type: none"><li>• Aircraft Technician, Aircraft Service Technician, Aircraft Maintenance Technician (Airframes)</li></ul>
47	Valuers and Loss Assessors (3315)	The following job title within this occupation is included: <ul style="list-style-type: none"><li>• Claims Assessor</li></ul>
48	Insurance Underwriter* (3321)	The following job titles within this occupation are included: <ul style="list-style-type: none"><li>• Insurance Underwriter, Reinsurance Underwriter</li></ul>

Note: The Critical Occupations List (COL) is constructed based on the Malaysia Standard Classification of Occupations (MASCO) 2013

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

### **Critical Occupations in Ten Key Sectors**

Ten key sectors were selected for consideration in the COL - (i) Aerospace, (ii) Electrical and Electronics (E&E), (iii) Medical Devices, (iv) Telecommunications and Multimedia, (v) Information and Communications Technology (ICT) and Global Business Services (GBS), (vi) Financial Services, (vii) Professional Services (Accounting), (viii) Oil, Gas & Energy, (ix) Petrochemicals and (x) Education. The Medical Devices sector is grouped with E&E, and the Petrochemicals sector with Oil and Gas. This is due to the presence of overlapping companies or information between the industries grouped together.

### **Critical Occupations in the Aerospace Sector**

<b>Table 2: Critical Occupations List – Aerospace Sector</b>			
<b>No.</b>	<b>MASCO</b>	<b>Critical Occupation</b>	<b>Job Titles</b> <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	1223	Research and Development Managers	Research and Development Manager, Product Development Manager
2	1321	Manufacturing Managers	Manufacturing Manager, Factory Manager
3	1324	Supply, Distribution and Related Managers	Supplier Development Engineer / Manager
4	2141	Industrial and Production Engineers	Automation Engineer, Planning Engineer, Cost Evaluation Engineer, Plant Engineer, Material Specialist, Industrial Automation Engineer, Process Development Engineer
5	2144	Mechanical Engineers	Machinery and Tools Industrial Engineer, Jet Engine Engineer, Welding Technologist, Aerospace Mechanical Engineer, Aeronautics Mechanical Engineer, Aero-Material Component Engineer
6	2149	Engineering Professionals (Excluding Electrotechnology) Not Elsewhere Classified	Materials Engineer, Quality Engineer, Supplier Quality Engineer (Aerospace), Non-destructive Testing (NDT) Specialist, Sustainable Material & Renewable Specialist

**Table 2: Critical Occupations List – Aerospace Sector**

No.	MASCO	Critical Occupation	<b>Job Titles</b> <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
7	2152	Electronic Engineers	Computer Engineer (Software)
8	2171	Ships Engineers	Aircraft Engineer, Structural & Stress Engineers, Tooling Design Engineer
9	2173	Aircraft Pilots and Related Professionals	Pilot
10	2182	Manufacturing Professionals	Manufacturing Executive, Quality Assurance Executive, Quality Control Executive, Maintenance Executive, Manufacturing Quality Controller Executive, Product Quality Controller, Procurement Engineer
11	2413	Financial Analysts	Pricing Analyst
12	2514	Applications Programmers	Applications Programmer, C/C++ Programmer
13	3114	Electronics Engineering Technicians	Computer-aided Design (CAD)/Computer-aided Manufacturing (CAM) Technician
14	3115	Mechanical Engineering Technicians	Aerospace (Mechanical) Engineering Technician, Aeronautical Engineering Technician, Mechanical Engineering Technician, Aeronautical (Mechanical) and Equipment Engineering Assistant, Computer Numerical Control (CNC) Technician, Welding Technician
15	3151	Aircraft Technicians	Aircraft Service Technician, Aircraft Maintenance Technician (Airframes)

## Critical Occupations in the Electrical & Electronics Sector (Including Machinery, Equipment and Medical Devices)

**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	1121	Managing Directors and Chief Executives	Director
2	1211	Finance Managers	Account Manager, Tax Managers
3	1223	Research and Development Managers	Research and Development Manager, Product Development Manager
4	1321	Manufacturing Managers	Manufacturing Manager, Manufacturing Production and Operation Manager, Factory Manager
5	2141	Industrial and Production Engineers	Industrial Engineer, Process Development Engineer, Analog Integrated Circuit (IC) Package Design Engineer
6	2144	Mechanical Engineers	Automotive Mechanical Engineer, Equipment Engineer, Mechanical Engineer (Instruments)
7	2149	Engineering Professionals (Excluding Electrotechnology) Not Elsewhere Classified	Process Engineer, Quality Assurance Engineer, Research Engineer, Photonic Engineer, Commissioning Engineer
8	2151	Electrical Engineers	Electrical Testing Engineer, Embedded System/Firmware Engineer
9	2152	Electronic Engineers	Electronics Engineer (Computer Hardware Design), Computer Engineer (Software), Information Technology Engineer, Electronics Engineer (Semiconductors), Printed Circuit Board (PCB) Design Engineer, Principal Engineers, Product Development Engineer & Test Dev Engineer, Leadframe Engineers, Wirebond Engineer, Surface Mount Technology (SMT) Engineer
10	2182	Manufacturing Professionals	Manufacturing Executive
11	2411	Accountants	Certified Accountant
12	2412	Financial and Investment Advisers	Finance Executive

**Table 3: Critical Occupations List – Electrical & Electronics Sector**

<b>No.</b>	<b>MASCO</b>	<b>Critical Occupation</b>	<b>Job Titles</b> <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
13	2413	Financial Analysts	Financial Analyst
14	2434	Information and Communications Technology (ICT) Sales Professionals	Engineering and Technical Operations, Product Support Engineer
15	2511	Systems Analysts	.Net Consultant
16	2512	Software Developers	Software Designer, Application Developer (.Net)
17	2522	Systems Administrators	SAP Application Administrator
18	3113	Electrical Engineering Technicians	Debug Technician, Electrical Technician
19	3114	Electronics Engineering Technicians	Electronics technicians, Test Technician
20	3115	Mechanical Engineering Technicians	Mechanical Engineering Technician (Industrial Machinery and Tools)

## Critical Occupations in the Telecommunications & Multimedia Sector

Table 4: Critical Occupations List – Telecommunications & Multimedia Sector			
No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	1121	Managing Directors and Chief Executives	Administrator, Chief Information Officer, Executive Vice President, Vice President, Managing Director, Chief Technology Officer, Director, Senior Director
2	1211	Finance Managers	Account Manager
3	1213	Policy and Planning Managers	Senior Manager (Regulatory Affairs), Project Planning Manager
4	1214	Business Services Managers	Business Development Manager
5	1221	Sales and Marketing Managers	Sales Manager
6	1511	Information and Communications Technology (ICT) Managers	Production and Operation Manager (Communications)
7	2153	Telecommunications Engineers	Value-added Service (VAS) Engineer, Network Architect, Network Designer, Network Planner, Network Optimisation Engineer, Transmission Network Engineer, IP Engineer, Network and Systems Engineer, Network Tester, Network Performance Engineer, Site and Construction Engineer (Telecommunications)
8	2166	Graphic and Multimedia Designers	Animator, 3D Artist
9	2421	Management and Organization Analysts	Strategy Analyst, Business Analyst
10	2434	Information and Communications Technology (ICT) Sales Professionals	Product Development Engineer
11	2511	Systems Analysts	.Net Consultant

**Table 4: Critical Occupations List – Telecommunications & Multimedia Sector**

<b>No.</b>	<b>MASCO</b>	<b>Critical Occupation</b>	<b>Job Titles</b> <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
12	2512	Software Developers	Software Engineer
13	2519	Software and Applications Developers Not Elsewhere Classified	Solution Architect (IT), Software QA Engineer
14	2521	Database Designers and Administrators	Database Architect, Database Administrator, Database Designer, Computer Auditor
15	2522	Systems Administrators	System Engineer (IT), Cloud Computing Solution Architect, Web and Mobility Developer
16	2529	Database and Network Professionals Not Elsewhere Classified	Digital Forensic Specialist, Security Specialist (IT), IT Security Architect, Penetration Testers
17	2844	Film, Stage and Related Directors and Producers	Television Producer

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

**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	1121	Managing Directors and Chief Executives	Chief Executive Officer, Operations Manager
2	1211	Finance Managers	Audit and Risk Management Manager, Tax Managers
3	1214	Business Services Managers	Business Development Manager
4	1222	Advertising and Public Relations Managers	Communications Manager, Public Relations Manager, Customer Service Manager, Contact Centre Manager, Call Centre Manager, Contact Centre Team Leader Manager
5	1511	Information and Communications Technology (ICT) Managers	Information Technology Manager, Computer Security Manager, Information Technology Project Manager, Creative Multimedia Manager, Security Operations Centre (SOC) Manager
6	2121	Mathematicians, Actuaries and Statisticians	Data Scientist, Data Analyst, Data Mining Analyst
7	2144	Mechanical Engineers	Technology Technical Engineer
8	2151	Electrical Engineers	Embedded System/ Firmware Engineer
9	2152	Electronic Engineers	Systems Engineer
10	2166	Graphic and Multimedia Designers	Web Designer, Graphic Designer, Designer, Digital Artist, Animator, Screenwriter, 3D Artist, 3D Modeller
11	2411	Accountants	Tax Accountant, Management Accountant, Account Executive, Bank Accounting Analyst, Auditor, Compliance Analyst



**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>
12	2412	Financial and Investment Advisers	E-Commerce Adviser
13	2413	Financial Analysts	Financial Analyst
14	2434	Information and Communications Technology (ICT) Sales Professionals	Information Technology Sales Engineer, Customer Support Representative, Product Development Engineer
15	2511	Systems Analysts	Electronic Data Processing Analyst, IT Business Analyst, .Net Consultant, Java Consultant, IT Specialist (SAP), Security Analyst (IT), Integrated Circuit (IC) Designer (IT), Technical Helpdesk Analyst
16	2512	Software Developers	Software Developer, Software Designer, Software Engineer, Java Developer, OpenText Developer
17	2514	Applications Programmers	Systems Programmer, Analyst Programmer, Applications Programmer, .Net Programmer, C/C++ Programmer, Cobol Programmer, Java Programmer, Hypertext Preprocessor (PHP) Programmer, Android/iOS Programmer, Animation Programmer, Computer Games Programmer, User Interface (UI)/ Gameplay Coders, Game Engine Programmers, Computer Infrastructure Specialist
18	2519	Software and Applications Developers Not Elsewhere Classified	Test Engineer (IT), Solution Architect (IT), Software Quality Assurance Engineer (IT)
19	2521	Databases and Administrators	Database Architect, Database Designer, Oracle Database Specialist Structured Query Language (SQL) Database Administrator
20	2522	Systems Administrators	Systems Administrator, Project Coordinator (IT), Computer Support Engineer
21	2523	Computer Network Professionals	Network Administrator, Network Engineer
22	2529	Database and Network Professionals Not Elsewhere Classified	Digital Forensic Specialist, Security Specialist (IT), IT Security Architect, Penetration Testers
23	2844	Film, Stage and Related Directors and Producers	Motion Picture Producer, Television Producer

## Critical Occupations in the Financial Services Sector (Including Takaful and Insurance activities)

**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	1121	Managing Directors and Chief Executives	Chief Executive Officer, Chief Operating Officer, Chief Medical Officer
2	1211	Finance Managers	Finance Manager, Audit and Risk Management Manager, Credit Manager, Insurance Manager, Tax Managers, Underwriting Manager, Financial Crime Compliance Manager, Claims Manager
3	1212	Human Resource Managers	Human Resource Manager
4	1214	Business Services Managers	Compliance Manager
5	1221	Sales and Marketing Managers	Marketing Manager, Market Research Manager, Product Manager
6	1223	Research and Development Managers	Product Development Manager
7	1511	Information and Communications Technology Managers	Chief IT Officer, IT Project Manager, IT Delivery Manager, Change Management (IT)
8	2121	Mathematicians, Actuaries and Statisticians	Actuarial Science Mathematician, Data Analyst, Appointed Actuary, Pricing Actuary, Product Actuary
9	2411	Accountants	Accountant, Audit and Risk Assessment Executive
10	2412	Financial and Investment Advisers	Corporate Financial Adviser, Financial and Investment Adviser
11	2413	Financial Analysts	Pricing Analyst, Research Analyst, Investment Analyst, Fraud Specialist, Rating Analyst, Financial Condition Management Analyst

**Table 6: Critical Occupations List – Financial Services Sector**

<b>No.</b>	<b>MASCO</b>	<b>Critical Occupation</b>	<b>Job Titles</b> <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
12	2421	Management and Organization Analysts	Business Consultant
13	2434	Information and Communications Technology (ICT) Sales Professionals	ICT Sales Application Engineer, Product Development Engineer
14	2511	Systems Analysts	Computer Systems Analyst, IT Business Analyst, IT System Analyst (JDE), Enterprise Systems Specialist (IT)
15	2512	Software Developers	Software Developer, Pega Specialist
16	2514	Applications Programmers	Applications Programmer
17	2519	Software and Applications Developers and Analysts Not Elsewhere Classified	Application Consultant
18	2521	Database Designers and Administrators	Computer Auditor
19	3315	Valuers and Loss Assessors	Claims Assessor
20	3321	Insurance Underwriter*	Claim Underwriter, Reinsurance Underwriter

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

## 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	2411	Accountants	Certified Accountant, Tax Accountant, Tax Consultant, Liquidator, Account Executive, Financial Controller, Auditor, GST Specialist
2	2413	Financial Analysts	Fraud Specialists

## Critical Occupations in the Oil, Gas & Energy Sector (Including Petrochemicals)

Table 8: Critical Occupations List – Oil, Gas and Energy 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 Manager, Audit Manager, Tax Managers
2	1212	Human Resource Managers	Human Resource Manager
3	1213	Policy and Planning Managers	Project Leader
4	1214	Business Services Managers	Country Manager
5	1322	Mining Managers	Production and Operation Manager (Oil and gas extraction), Oil and Gas Extraction Manager, Mining Manager, Senior Project Manager (Engineering, Procurement, Construction, Installation & Commissioning), Drilling, Well Stimulation, Wellbore & Completion Manager
6	2114	Geologists and Geophysicists	Geophysicist, Oil Geologist, Mining Geologist, Petroleum Geoscientist
7	2141	Industrial and Production Engineers	Process Development Engineer, Fibre Reinforced Plastic (FRP) Production Engineer
8	2144	Mechanical Engineers	Equipment Engineer, Offshore Installation Managers Mechanical Engineer (Design), Mechanical Engineer (Rotating Equipment), Offshore Equipment Engineer
9	2146	Mining Engineers, Metallurgists and Related Professionals	Drilling Engineer
10	2149	Engineering Professionals (Excluding Electrotechnology) Not Elsewhere Classified	Process Engineer, Head of Engineering, Method & Process Engineer

**Table 8: Critical Occupations List – Oil, Gas and Energy Sector**

<b>No.</b>	<b>MASCO</b>	<b>Critical Occupation</b>	<b>Job Titles</b> <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
11	2411	Accountants	Accountant
12	2511	Systems Analysts	IT Analyst
13	3115	Mechanical Engineering Technicians	Mechanical Engineering Technician, Hydraulic Workover Unit Superintendent / Supervisor

## Critical Occupations in the Education Sector

Table 9: Critical Occupations List – Education Sector			
No.	MASCO	Critical Occupation	Job Titles <i>(Based on bottom-up feedback, input from sector regulators and administrative data)</i>
1	1213	Policy and Planning Managers	Senior Manager (Regulatory Affairs)
2	1221	Sales and Marketing Managers	Sales and Marketing Manager
3	2311	University and Higher Education Professional Teachers	University Lecturer, University Lecturer (Clinical – Medicine), University Lecturer (IT), University Lecturer (Engineering), University Lecturer (Actuarial Science)
4	2511	Systems Analysts	.Net Application Consultant

