



**OUR
SKILLS**

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ABOUT US

WHAT IS **WORLD**SKILLS?

WorldSkills is the global hub for skills excellence and development. Through international cooperation and development between industry, government, organizations, and institutions, we promote the benefits of and need for skilled professionals through grass-roots community projects, skills competitions, and knowledge exchange. We show how important skills education and training is for youth, industries and society by challenging young professionals around the world to become the best in the skill of their choice.

ABOUT **THE** **WORLD**SKILLS **COMPETITION**

The WorldSkills Competition is our flagship event, held biennially in a Member country or region. Competitors from our 74 Member countries and regions compete in 50 different skills. The Competitors are all under the age of 23 years (except for four skills that have the age limit of 25). This is a multifaceted event that is considered to be the global meeting place for government, education, industry, and association leaders to discuss relevant and important issues related to skills worldwide.



OUR VISION

"Improving our world with the power of skills."

OUR MISSION

"To raise the profile and recognition of skilled people, and show how important skills are in achieving economic growth and personal success."

OUR POSITION

"The global hub for skills excellence and development."



CONSTRUCTION AND BUILDING TECHNOLOGY



ARCHITECTURAL STONEMASONRY

An architectural stonemason generally works in the commercial sector — cutting and carving all types of natural stones either by hand or with machines.

The work of an architectural stonemason ranges from the workshop to heritage sites; from basic places of worship to massive Gothic cathedrals; and from simple everyday buildings to significant “landmark” structures that often define a place and represent a country’s history.

Creating, restoring, conserving, renovating, and maintaining our heritage and culture through architectural stonemasonry has been highly valued by societies around the world from the beginning of time. Significant structures reflect our past; are designed to shape our future; and often inspire us to travel great distances to experience such structures for learning and pleasure.



BRICKLAYING

The bricklaying component of a house or building is usually the most prominent aspect that people see. The main responsibility for the bricklayer is to construct masonry components accurately and neatly according to the plans, which often contain technical details.

As no two projects are ever the same, the bricklayer must be able to adapt their thinking and problem solve efficiently and effectively.

The bricklayer will interpret drawings, set out and measure, construct, and finish to a high standard. They will commence their work with exceptional planning and scheduling skills, and continue with concentration, precision, accuracy, and attention to detail, to achieve an excellent finished project. They will work safely and tidily, with resilience and endurance.

Whether it is the brick work of a pathway, a wall or a house that next catches your eye — look closely at the work. You will see that an outstanding bricklayer has demonstrated their keen skills in organization, communication, creativity and design, problem solving, and accuracy.



CABINETMAKING

Cabinetmaking includes the production and installation of furniture, free-standing and built-in units — utilizing wood as either the sole or primary material. In some instances, cabinetmaking may also include design.

A cabinetmaker typically works on high-quality residential or commercial “bespoke” pieces — and as such, will pay close attention to client expectations and inputs. They will work to very high skill standards and maintain professionalism at all times.

The cabinetmaker will produce, interpret and/or adapt drawings, set out and measure, cut, form joints, assemble, install (if required), and finish to a high standard. The quality of their work is shown by the selection of wood and other materials to best show characteristics; near-perfect fit, cutting and assembly of components; construction; and final appearance.

In a modern world that highly values the eye and hand of the skilled craftsman, an outstanding cabinetmaker will always be in demand.

CONCRETE CONSTRUCTION WORK

A professional in concrete construction work is closely associated with skilled individuals in other sectors of the construction industry. They work with the many products that support the industry — most often for commercial purposes on varied types of building projects and sites.

They will interpret drawings, set out and measure, construct, and finish to a high client standard. Exceptional skills in planning and scheduling, concentration, precision, accuracy, and attention to detail to achieve an excellent finish are important.

Work organization and self-management, communication, and interpersonal skills, problem solving, innovation and creativity, and working accurately are the universal attributes of the outstanding construction practitioner.



CARPENTRY

Carpentry work includes measuring, cutting and installing components of a residence or commercial building — this includes; floor, stair, and wall and roof systems. It may also include windows and doors, roofing materials, interior and external finishing components, and precision items like trim and moulding. A carpenter may also be required to construct forms for concrete, wall and roof systems of the structures, and construct/install sidings, shutters, roofing materials, as well as out-buildings such as garages, sheds, gazebos, pergolas, and play houses.

Every step in the process matters; the carpenter must work safely and tidily, have stamina, demonstrate exceptional planning and organization skills, concentrate and maintain attention to detail in order to achieve an excellent finish.

An apprentice carpenter must master the use of tools; complete rough and finish carpentry work; learn how to complete intricate jobs, and appreciate the importance of accuracy. This is an exemplary and productive pathway to success for any aspiring expert in this field.



ELECTRICAL INSTALLATIONS

Electrical installation is closely associated with other sectors of the construction industry and as a result, electricians find themselves working in all manners of commercial, residential, agricultural, and manufacturing environments.

In these various settings, they will plan and design, select, and safely install a reliable system. An electrician will also commission, test, program, maintain to relevant standards, diagnose and report malfunctions, and repair systems.

Work organization and self-management, communication and interpersonal skills, concentration and attention to details, problem solving, flexibility, and a large range of knowledge are universal attributes of an outstanding electrician.



JOINERY

Joinery is closely associated with cabinet making and carpentry. Working from drawings, the joiner produces items such as doors, windows, stairs, tables, and bookshelves.

As the formation of various joints requires specialist machinery, the joiner is usually based in a workshop, but will sometimes undertake installations in the homes of customers as well as on building sites. They will produce and interpret drawings, set out and measure, cut, form joints, assemble, install, and finish to a high standard.

There are many commercial, residential and international opportunities for the talented joiner, and the diversity of skills and opportunities associated with joinery is likely to expand.

PAINTING AND DECORATING

The painting and decorating professional is responsible for the external and internal appearance of a building and its protection from water, rust, mould, and insects. Building types and sites are highly varied, including offices, factories, schools, hotels, and private homes in various settings and climates.

The painter decorator will possess a range of skills including communication, creativity, innovation, and problem solving. They may offer a range of services, including interpreting client requirements and drawings, advising on designs/colours, painting, spraying, decorative coatings, wallpapering, gilding, and sign writing.

The painter decorator must have technical skills in planning and scheduling; the ability to prepare surfaces thoroughly and carefully; and maintain a commitment to working safely and tidily with an attention to detail.



LANDSCAPE GARDENING

The key roles for a landscape gardening professional are to design, install and maintain gardens and landscaped areas including; private and public gardens, parks, public open spaces, sports and recreation venues, and playgrounds.

They must be able to develop innovative and creative schemes that meet the needs of highly varied clients, and comply with planning regulations — while retaining a vision of how the finished project will fit into the overall natural and built environments.

The landscape gardener may be involved at all stages of a project from the initial consultation and design, throughout the installation process, project managing and supervising the installation team, to providing advice and guidance on on-going maintenance and development as the garden grows and matures.

A detailed knowledge of both hard and soft landscaping is required, including knowledge of plants and trees, natural stones, and other materials — in order to produce and implement a balanced plan that takes account of the area's advantages and limitations relating to soil type and structure, geography, climatic conditions, and planned use. Related skills such as construction, electrical installation,

and plumbing and irrigation systems are needed to produce an overall project that is sustainable.

Gardens and landscaped areas enhance the quality of life for millions of people across the world by providing beautiful areas for recreation and relaxation, open spaces in dense urban environments, appropriate spaces for people of all ages and abilities, and facilities that support community activity and cohesion.



PLASTERING AND DRYWALL SYSTEMS

Traditional plastering involves the careful preparation of an internal or external background for application or repair of a plaster surface. In addition to working with flat surfaces, a skilled plasterer will create and install decorative mouldings and details. A great deal of modern internal work uses drywall systems. This involves the plasterer creating complex metal frames and installing plasterboard before application on the final surface. Preparation work includes complex mathematical calculations; understanding specifications; converting plans into reality with accuracy, care, attention to detail, and finished aesthetic.

A plasterer may work on projects of varying size and complexity, including single domestic or commercial premises, historic buildings and heritage sites. As work on larger sites is often sub-contracted, self-employed plasterers need knowledge and skills in business management, finance and regulations, and standards governing the profession.

Because of the various types of materials used in Plastering and Drywall Systems; an expert and environmentally aware plasterer will take care to prevent injury or damage in use or disposal of waste.



PLUMBING AND HEATING

A plumbing and heating technician works on commercial, residential, agricultural, and industrial projects of varying size and scope — from a single home repair job to large and complex facility projects.

They will plan and design, select and install, commission, test, report, maintain, troubleshoot, and repair systems to specifications. Whether it is working to provide a safe and reliable service in accordance with relevant standards, diagnosing malfunctions, or programming and commissioning home and commercial automation systems — an expert in this field will require concentration, precision, accuracy and attention to detail.

WALL AND FLOOR TILING

The work of a tiler includes laying tiles of ceramics, mosaic or natural stone on walls, floors, and staircases. This may occur in houses, commercial, industrial and public buildings, churches, swimming pools, outside installations, and façades to provide protective and decorative finishes. Wall and floor tiling work might also include the construction of small walls and steps made from bricks or blocks.

The tiler contributes in many ways to the completion of a successful project. They will interpret drawings; set out and measure; remove any existing covering; prepare surfaces; group and lay tiles in the desired pattern, and then finish to the highest standard and client specification.

Experienced proficient tilers have opportunities to specialize in particular materials such as mosaic, or unique applications including artistic work, high-end residential and private or competition venue swimming pools.

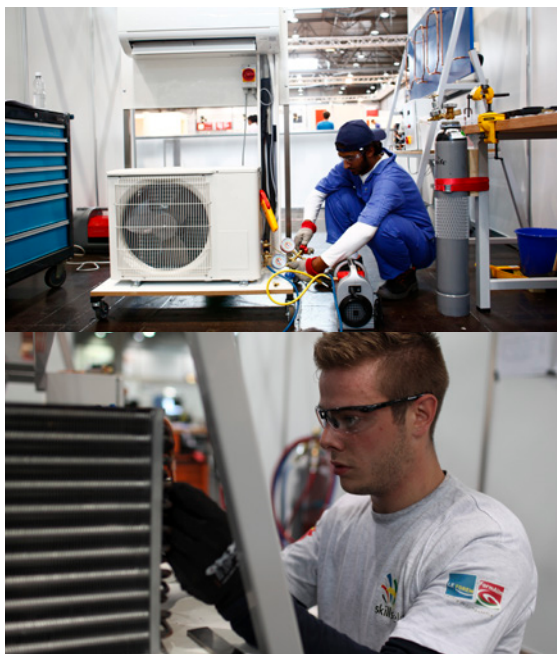


REFRIGERATION AND AIR CONDITIONING

A refrigeration and air conditioning engineer works on all manner and size of commercial, residential, public, and industrial projects — usually after construction and production is completed.

From ensuring a safe and reliable installation in accordance with relevant standards, through to diagnosing malfunctions, system maintenance or upgrading, and fault finding and correction — the skills of communication, technical knowledge of systems and operations, concentration, precision and attention to detail are crucial.

The most talented engineers are most likely to lead the industry in innovating and resolving issues relating to climate and environment. Affecting development and wellbeing (including health) — this engineer has immense potential to make a positive impact on communities and economies locally and globally.





CREATIVE ARTS AND FASHION

FASHION TECHNOLOGY

The fashion technology practitioner designs and creates garments based on an understanding of aesthetics and a strong foundation of technical skills including design, pattern making, and use of specialized equipment for pattern making, cutting, and manufacture. There is a wide range of practice — from high fashion or bespoke garments to prototyping for mass production and retail. In all cases, the most successful in this field will have a passion for, and understanding of, global fashion trends and consumer requirements.

Since fabrics are often expensive, delicate and can be easily damaged or handled incorrectly, the practitioner must be respectful of the properties of raw materials, including knowledge of the ethics and sustainability around materials sourcing, purchasing, handling, and storage. Budgets are all serious considerations in this field.

The design of a garment requires innovation, creativity, and artistic and design talents that incorporate both aesthetics and practicalities. The practitioner applies the theory and principles of design as well as detailed and precise technique.

Understanding a client's passion and expectation for a distinctive "look", as well as assessing the attributes of a particular client is critical. The client will have high expectations of the designer; place a high degree of trust in them; and count on the "eye" and skill of the practitioner to create something uniquely, individually beautiful.



FLORISTRY

Floristry requires both creative and business skills including, materials aesthetics, selection and sustainability, and client communication and relationship building.

Flowers and other botanical materials are delicate, easily damaged or spoilt, often scarce, and have a limited storage life. As such the florist must be respectful of the nature as well as beauty of the raw materials with which they work, and apply extensive knowledge of effective sourcing, purchasing and storage of all botanical materials.

Whether it is a small bouquet or a themed installation for a large event, the florist must be innovative, market and client-savvy, creative, business like, cost conscious, and practical. Respect for the uniqueness, beauty and sustainability of materials will be uppermost in the mind of an expert florist as they bring to life something that we recognize as "simply beautiful!"



GRAPHIC DESIGN TECHNOLOGY

Graphic Design Technology comprises many different skills and disciplines in the production of print and/or online publications and products. Individuals in this field are highly creative and client focused and must possess the ability to listen and communicate well.

The types of design and technical work they may be required to complete include, but are not limited to: editorial, packaging, corporate branding, information and way-finding, advertising and display design, image manipulation, montage, colour correction, and retouching.

Projects often include the following stages: research, planning, idea generation, designing and creating the final product, and applying the technical specifications for the intended output media. The practitioner must have a solid grasp of the specified printing and production processes.

There are many pathways for an individual with skills in graphic design technology — leading to work in an advertising firm, printing company or a corporate design department. Should one choose to specialize, they may take on the role of graphic designer/artist, illustrator, typographer or typesetter, prepress operator, digital printer, packaging specialist, and many more.

VISUAL MERCHANDISING AND WINDOW DRESSING

A professional in the field of visual merchandising and window dressing creates window and interior displays in shops and department stores — aiming to maximize sales by communicating with the target audience and creating a “WOW” reaction. Today it is accepted that the skills of the visual merchandiser play an increasingly important element in the marketing and sales mix of a successful retail business.

A visual merchandiser undertakes activities that are grounded in researching and interpreting a project brief; understanding market trends and target audiences; and working with products and props to create an eye-catching display.

With the dynamic globalization of visual imagery, there are many commercial and international opportunities for the skilled professional in this field. They need to understand, embrace, and want to work with diverse cultures, trends, and fashions.



JEWELLERY

A jeweller may make either exclusive individual pieces ready to be set with precious gemstones, or prototypes for reproduction. At times they are required to replicate, renovate or repair an existing piece of worth or sentimental value to its owner.

As they work with precious metals, a jewellery maker needs to be precise, work economically and avoid wasting materials. The work is intricately detailed and requires a high level of skill, focus, and concentration. Due to the intricate nature of the work, many of the tools are delicate and therefore need to be used and handled with extreme care.

Given the value of the materials with which the jewellery maker works, they must act with complete honesty and integrity and be fully aware of the ethics, regulations and security that relate to the sourcing, purchase, production, and sale of precious metals, gemstones and finished pieces.





INFORMATION AND COMMUNICATION TECHNOLOGY

INFORMATION NETWORK CABLING

Cable is the medium through which information typically moves from one network device to another. The network cabling technician constructs telecommunication networks infrastructure, and installs the cabling for business and domestic users for services such as broadband, cable television, and telephone.

This work is highly technical and requires detailed specialized knowledge in order to independently design and install networks that meet client needs and conform to recognized industry standards.

In all cases, robust and reliable communications networks are critical to sustaining business success and maintaining the high level of connectivity we have come to expect in our world today.



IT NETWORK SYSTEMS ADMINISTRATION

As all of us realize that a wide range of IT network administration services are critical today for the organization and operation of business, industry, and government. Any "downtime" is costly in terms of both finance and lost productivity.

The system administrator may apply a broad skill set or may choose to specialize among services including design, system installation/upgrading, troubleshooting, configuration of systems and network devices, and user support. Experts in this field keep up to date on research and technology, products and services in the industry, and maintain a consistent and methodical investigative approach to their work.

From ensuring commercial entities remain "up and running" with limited systems breakdowns, to contributing to the design and development of new and innovative systems, the role of the IT network systems administrator is widely accepted as business critical.





IT SOFTWARE SOLUTIONS FOR BUSINESS

The continuously accelerating pace of business globalization and connectivity has been largely driven by developments in Information and Communication Technology (ICT) and related IT Software Solutions. Developing software solutions to improve business encompasses many different skills; however, key to all these is an individual's passion and ability to keep up with the rapid pace of change.

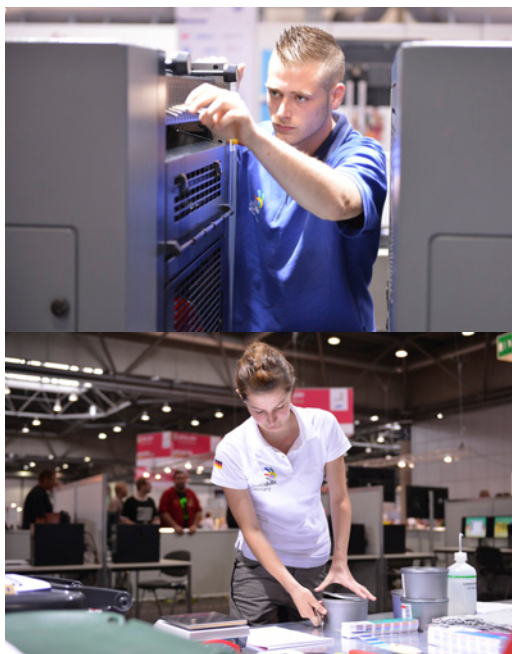
Working closely with clients, as either individuals or as a team, the IT professional may be responsible for one or more roles including business/system needs analysis; developing system specifications; system design, installation and testing; end-user training; trouble shooting; system improvement or modification; and even downstream maintenance.

PRINT MEDIA TECHNOLOGY

Print Media Technology involves the production of printed material using sheet-fed offset and digital printing presses. They may be required to use other equipment to create finished and printed products. The print media technician is involved with all aspects of the printing process from the initial planning and preparation, through to the print run, checking for consistent quality in the final product, to cleaning up after the print run is complete.

The technician most often works in a printing or publishing business, and needs to have a deep knowledge of how to handle, troubleshoot, and maintain printing factors such as ink types, custom colour mixing, paper properties, and complex printing, trimming/cutting and quality control equipment.

The technician must continuously demonstrate expertise, and exercise technical and creative decisions throughout an often long but always exciting evolution from concept to completion.



WEB DESIGN

Web Design encompasses many different skills and disciplines in producing and maintaining, re-designing or upgrading websites. The field is exciting, creative and transforming the way we source, exchange and publish news, and present entertainment.

Strong design and communication skills, coupled with research techniques and a grasp of target audiences, markets and trends will ensure initial client satisfaction and credibility for the web designer.

Commencing with information regarding client needs and the target audience, the designer conceptualizes the site look and feel; works with a variety of tools and platforms to develop databases, navigation and content presentation; and may create programs. There is often a plan for testing and "de-bugging" the site prior to going live. They will need to have access to ICT facilities, open source libraries and frameworks. To excel they must have a strong grasp of copyright law and a well-developed personal code of ethics. Understanding considerations around cyber security is increasingly relevant. In the ever-widening world of the web, a designer may choose to specialize in an area such as Graphic Design, Client Management, Front End Development, Back End/Server Side Development, User End Designer, or related Social Media.

Foremost, the designer who excels will understand and recognize the importance of aesthetics, strong client relationships, and the professional advantage of keeping at the forefront of ever-dynamic web trends and technology.



MANUFACTURING AND ENGINEERING TECHNOLOGY

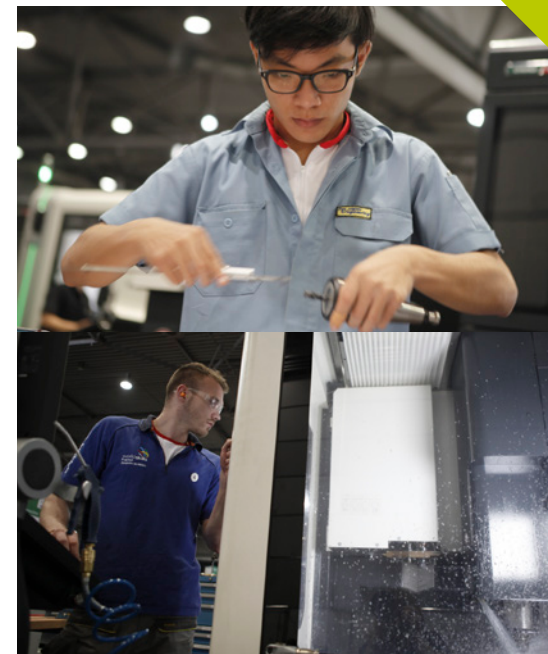
CNC MILLING

Nearly everything we see or use today has been manufactured utilizing CNC technology — including cars, airplanes, components of machines of all types, moulds for tools, medical prosthetics, cell phones, toys, and more.

CNC milling machines are programmed with a computer code to read and store instructions to control and drive a powered mechanical device to cut metal and other solid materials and shape precision products.

The milling machinist will read and interpret engineering technical drawings and specifications; generate and program a plan using a computer; set up the tooling, work holding device and work piece; manipulate the cutting conditions; and operate, inspect and maintain the precision and accuracy of dimensions and details throughout the process.

They are proficient at metal work skills, understand how metals react to various processes, and are a skilled operator of both computers and machines. The most skilled machinist always works to optimize the efficiency of the process as well as the quality of output.



CNC TURNING

One very important method of producing the many precise and interactive parts of complex products like a smartphone, airplane or automobile is CNC (Computer Numerical Control) Turning.

The turning machinist receives a blueprint; then programs a computer using accurate inspection tools to fit the blueprint specification. They set up the CNC lathe on which material turns around an axis at high speed — and where cutting tools driven by computer software are moved to produce the expected part with the cutting or clamping tools most appropriate to the material being used.

The finished part is sent to the assembly line with every other part, and if everyone has done their job well, the final assembly will meet all expectations and the CNC turning machinist has played a pivotal role in this success.



CONSTRUCTION METAL WORK

Construction Metal Work involves the skills required to mark out, cut and assemble, repair and maintain steel structures and substructures. A construction metalworker must have a good knowledge of mathematical calculations and geometrical techniques, and be able to interpret engineering drawings to lay out, cut, shape, and accurately assemble sheet/plate into structures. They must be able to fabricate small to large structures and check them for correct dimensions, square, parallel, and flatness.

A construction metalworker uses a range of cutting and shaping tools and equipment to prepare sections for assembly and a variety of standard welding processes to assemble and join these materials.

Construction metal work serves industries that include dairy, pharmaceutical and chemical industries, and civil engineering projects that may involve steel structures for buildings, bridges or lifting equipment.

INDUSTRIAL CONTROL

Industrial control includes electrical installation; however, is now leaning more towards automation installation. There are a wide range of required technical skills, including installation of conduits, cables, instruments, devices and control centres. The practitioner will also need to design circuits and program programmable logic controllers, parameterize bus systems and configure human machine interfaces.

A key skill of the practitioner is troubleshooting both during installation and with an existing installation.

Keenly aware of business reputation and financial consequences of delays in production as a result of reliability issues on the production line — they will need to work in a logical manner; meet time constraints; and provide expert advice and guidance as well as innovative and cost effective solutions to production requirements, operations and problems. As the work environment may hold potential hazards, the practitioner needs to proactively promote best practice in health and safety working and to rigorously adhere to health and safety rules and regulations.

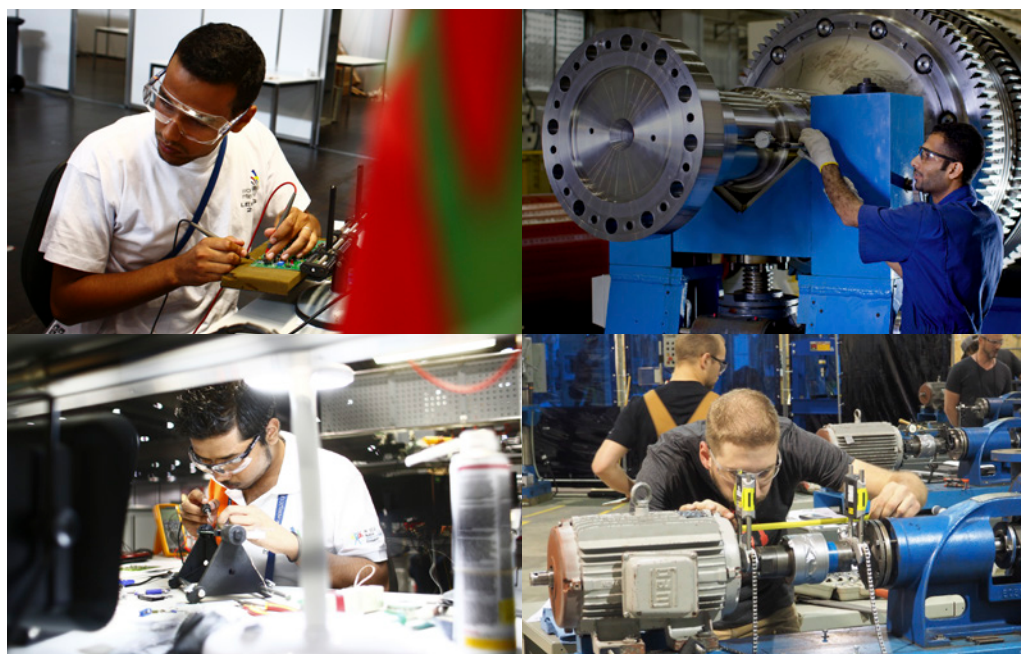


ELECTRONICS

Electronics is very diverse field, and while some technicians and engineers work across multiple aspects of electronics — specialization is increasing in areas including the assembly and wiring of electronic products; the designing of prototype circuits; the installation and commissioning of equipment including customer support; service and maintenance; monitoring and testing sub-assemblies or systems; and approving fit-for-purpose and simulating outcomes. They will need to work with a wide range of both hand and computer tools, and should be capable of explaining elements of complex electronics principles to clients.

Specialists find opportunity in a wide variety of industries including aerospace and aeronautics, robotics, media and entertainment, hospitals and research labs, power, transport, security, manufacturing, and the military.

Whatever the industry, given constant and rapid developments in technology, the electronics technician and engineer needs to be proactive in ensuring that their skills and knowledge are up-to-date and meet industry standards and expectations



INDUSTRIAL MECHANIC MILLWRIGHT

Industrial mechanic millwrights are most often involved with installing, maintaining, repairing, and removing stationary industrial machinery, mechanical equipment and/or automated and robotic systems in industrial plants and factories.

They will plan and design, select and install, commission, test, report, maintain, and fault find, applying skills in problem solving and a deep body of knowledge. This covers working to provide a safe installation and maintenance service, in accordance with relevant standards, diagnosing malfunctions, and commissioning stand-alone industrial mechanical and automated systems.



MANUFACTURING TEAM CHALLENGE

This skill competition involves teams of complementary skilled specialists working to design, manufacture, assemble, and test new or improved equipment — either as a one-off item or as the prototype for mass production.

Technicians skilled in project management, finance, organization, computer-aided design, programming, machining, welding, electronics, and fitting, form teams to tackle the Manufacturing Team Challenge. Each team member requires the ability to think, work and contribute beyond the boundaries of individual skill in order to make the most of the team's combined efforts.

Working in teams mirrors what we see today in industry and business. As a member of a team, individuals have a unique opportunity not only to deepen their own skills but also to learn more about related skills.

MECHATRONICS

Mechatronics technicians design, build, maintain, and repair automated equipment, and program the equipment and systems which enable communication between machines and people. They also deal with equipment for information gathering, components and regulating units.

The more common and visible mechatronics appliances include shop tills (belt and cash register assemblies) and automated bottle machines.

Industrial applications include — but are not limited to — automated production and process lines that include assembly, packaging, filling, labelling and testing, as well as automated distribution and logistics systems.



MECHANICAL ENGINEERING DESIGN – CAD

Computer-aided design (CAD) is the use of computer systems and software to assist in the creation, modification, analysis or optimization of an engineering design. CAD software is used to increase the productivity of the designer, improve the quality of design, improve communication through documentation, and create a database for manufacturing. CAD output is often in the form of electronic files for print, manufacturing or other manufacturing processes.

CAD applications are extensively used in many specifically mechanical applications across industries, including automotive, ship building, aerospace industries, and industrial design. CAD software helps us explore ideas, visualize concepts through photorealistic renderings and movies, and simulates how the design project will perform in the real world.

Today, CAD is an essential tool in engineering, manufacturing, product design, sustainability, and even entertainment, as it helps us explore ideas, visualize concepts, develop solutions to problems, and test how the design project/product will perform in the real world.



MOBILE ROBOTICS

Mobile robotics is an ever-changing and fast-evolving field with applications in diverse industries, including manufacturing, agriculture, aerospace, mining, and medicine.

A robotics engineer designs, maintains, develops new applications, and conducts research to expand the potential for robots.

Client consultation results in an accurate specification around the design and function requirements of the robot. The iterative design phase follows and a prototype is assembled. The robot is then programmed and tested to ensure consistent performance.

Robotics engineers must be familiar with logic, microprocessors, and computer programming so that they can design the right robot for its intended application. They prepare specifications for the robot's capabilities, and are responsible for cost efficient design, cost-price calculations and quality control. The ability to innovate, experiment, transfer analytical skills, and generate solutions to resolve technological challenges is essential.



PLASTIC DIE ENGINEERING

Plastic Die Engineering professionals are engaged in the mass production of plastic products by producing a part mould based on drawings by a parts designer. The design and processing of the mould is done with the help of software systems; most of the machining is completed on CNC (Computer Numerical Control) machines. The machined parts are then polished and assembled to prepare them for trial. Completed moulds are installed in an injection moulding machine, from which the plastic products are then manufactured.

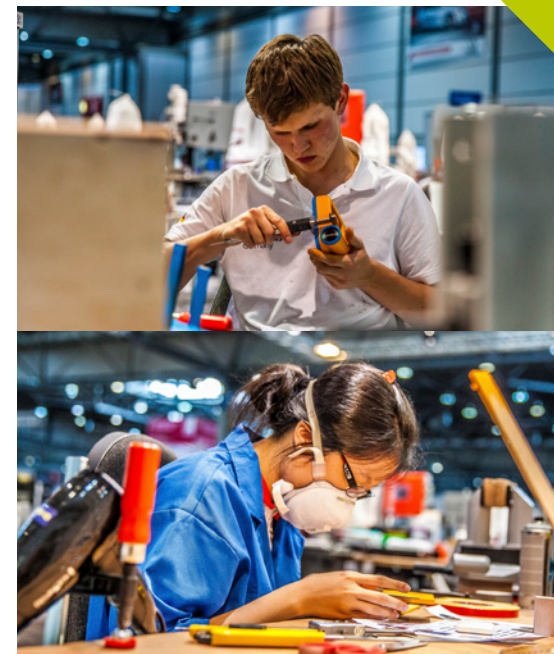
There are many different industries that utilize plastic die engineering. Plastic injection moulded components are used in telecommunications, medical, aerospace and automobile industries, for home appliances, office automation, entertainment, and electronics. The different application requirements for each provide challenges to the engineer — ranging from modelling the product and designing the die to manufacture, inspection and troubleshooting of any defects prior to mass production.

The skilled practitioner requires excellent skills in numeracy, hand and machining skill, polishing, assembling, testing, and troubleshooting.

PROTOTYPE MODELLING

There is often uncertainty as to whether a new design will actually do what is desired; there can be unexpected problems. A prototype is often used as part of the product design process to give engineers and designers the ability to explore design alternatives, test theories and confirm performance prior to commencing production. The prototype modelling practitioner is involved with the design, creation, testing, and modification of prototypes. Practitioners in this field manufacture models with many different exciting materials. They use their knowledge, skills and experience to tailor the prototype according to the specific unknowns present in the intended design. Generally, a series of prototypes will be designed, constructed and tested progressively to refine the design based on analysis of the prototype.

Prototyping specialists are individuals with excellent interpersonal and communication skills which provide clients with confidence that the specialist advice and guidance resulting from prototyping fully supports their production plans. The prototyping engineer possesses a range of skills related to 3D computer-aided design and machining systems such as milling, printing and other CAM machining, vacuum casting, prototype model making by hand tools and machines, and spray painting and finishing.



POLYMECHANICS AND AUTOMATION

Polymechanics technicians work in a wide range of settings using machining tools to produce and install parts for production machinery and equipment.

The profession requires understanding and skills in logic and automation control, electrical and circuitry work, hydraulics and pneumatics, mechanical and maintenance fitting, and related basic technologies.

The role involves identifying or remedying problems to avoid costly delays in production, as well as providing innovative and cost effective approaches to production.

Since the working environment is often sensitive; the exemplary practitioner promotes health and safety best practice and rigorously adheres to health and safety legislation.



SHEET METAL TECHNOLOGY

A Sheet Metal Technology technician interprets drawings; develops suitable patterns by hand on a drawing board or by computer; cuts and forms sheet materials into complex shapes and assembles both manually and by machine. They work with a range of materials including ferrous and non-ferrous — and therefore need to understand the joining and fastening of all of these materials.

These technicians work in factories and workshops equipped with a range of hand and bench tools, power and computer-controlled tools, and specialist machines. A sheet metal technician will be able to operate all types of welding equipment, sheet metal hand fabrication, and dressing tools.

Sheet metal technicians serve a wide range of sectors including the marine, aviation, food, pharmaceutical, ventilation, transport, architectural, and furniture industries.



WELDING

A welder interprets engineering working drawings, standards and symbols to prepare and join a range of metals of various gauges using electrical and electrical/gas shielded processes.

Welding professionals need to have a thorough knowledge and understanding of various welding equipment and processes, metallurgy, and electrical processes in order to choose the correct process — depending on the material being joined. It is very important that they thoroughly understand safe working procedures and personal protection equipment.

The skill set of an expert welder is broad; so too is the range of industries in which a welder can work — including civil engineering, mechanical engineering, transport, marine engineering, construction, service, and leisure industries. A welder has the opportunity to work in diverse locations and situations, ranging from a bench in a factory, to shipyards, power stations, petro-chemical plants, and off-shore gas or oil rigs or terminals.

Today's expert welder may specialize in one or a number of welding processes and environments, and may train to work with exotic alloys. Modern welding is evolving quickly, and currently includes exploration into the exciting field of "virtual" welding.





SOCIAL AND PERSONAL SERVICES

BAKERY

The baker is a highly skilled professional who produces a wide range of bread and pastry items such as instant breads, sweet dough, rye breads, croissants, brioche, artisan breads, and puff pastry products commercially.

Years of training and a high degree of specialist knowledge and skill is required. The expert baker will be proficient in a wide range of specialist techniques, tools and equipment to mix, process and bake the variety of breads needed. Artistic talent and attention to detail are required alongside the ability to work effectively and economically in order to achieve outstanding results within set timeframes.

Bakers must have a good understanding of reformulating recipes and adapting to changing environments and tastes. The professional baker appreciates the quality of their ingredients, respects those ingredients, and works to high levels of food hygiene and safety.

Specialist bakers may work in high-end hotels, smaller country bakeries, or specialised bakeries. Specialist retail shops often display and sell hand-made and decorated pastry products, artisan breads and decorative dough — all of which are prepared using the skills of a specialist baker to tempt us all.



BEAUTY THERAPY

A beauty therapist is an expert in offering specialist treatment services and advice for the care of skin and body, including massage and make-up. Beauty therapy also has an important therapeutic role beyond cosmetics in supporting an individual's self-esteem and confidence. It may even help improve the effects of illness, and aid in recovery.

Beauty services and treatments relate to the face, body, feet, hands and nails. The beauty therapist works in relationship with clients on a one to one basis or as part of a team. The trained and experienced beauty therapist takes on a high level of personal responsibility and autonomy — from understanding client expectations to safeguarding the client's health and wellbeing. Every treatment is important as clients trust therapists to provide expert services and advice to make recognizable positive differences in their appearance.





COOKING

The professional chef may work in a wide range of establishments and the range of skills and customer expectations varies according to the work-place.

As well as the skill of cooking — the role of a chef demands additional skills that relate to menu compilation and costing, working to a budget or profit margin, control and storage of stock, and managing the pace and workflow of a kitchen brigade. In some settings, the kitchen team needs to work effectively with other departments both in the front and back of house to ensure a positive overall experience for guests.

The chef in a top-tier hotel or restaurant will need to demonstrate outstanding skills in food preparation and presentation. They will be expected to create and adapt dishes that meet the expectations of demanding customers (and critics!). It is important that chefs keep abreast of the trends and are aware of their competition in the foodie marketplace.

Commercial kitchens are equipped with complex specialist equipment that must be used carefully to avoid accident and injury. Strict maintenance of equipment, personal and food hygiene, and safety standards are paramount considerations and often subject to strict regulation.

With the globalization of cuisine, chefs can work with talent, inspiration, ingredients, and in establishments all over the world. Although the pressures in this field are great, the opportunities are almost endless and the potential for career advancement is ever present.

HAIRDRESSING

All of us appreciate and take advantage of expert hairdressers. Hairdressing has a practical role in the everyday world of personal appearance and hygiene, and also plays an important therapeutic role in supporting individuals' self-esteem and confidence. It also may help to relieve the effects of illness, and can aid recovery.

The hairdresser works in diverse environments including large, medium, small, or mobile salons, client homes, product companies, training institutions, film and television productions, theatre, wig work, hair replacement, technicians, session stylists, and product research and design. They may either specialize or offer a wide range of services, including cutting, colouring, styling, chemical reformation, and special hair treatments for men, women or both.

Communication and client care, the ability to analyze hair types and conditions, work safely and to manufacturers' product instructions are the universal attributes of the outstanding hairdresser. With the globalization of various styles and trends in personal appearance or "look" — the worldwide demand for experts in hair treatment and hairdressing products is expanding rapidly with WorldSkills affording the most outward-looking and talented entering professionals the chance to succeed.



HEALTH AND SOCIAL CARE

A health and social care practitioner may work directly for a client or be employed by an organization within the health and social care sector. Health and social care is closely associated with the medical profession.

The practitioner works in diverse environments, including the homes of clients, hospitals, community day care and residential and nursing homes. They manage health, physical and psychosocial well-being, support of growth and development, caring, and rehabilitation for the client. The specialized support provided is based on assessing, planning, delivering, and evaluating a care programme.

Work organization and self-management, communication and interpersonal skills, problem solving, flexibility and creativity, empathy, and the ability to understand and work with clients to improve the quality of their life are the universal attributes of the outstanding practitioner.



PÂTISSERIE AND CONFECTIONERY

The Pâtisserie and confectionery cook is a highly skilled professional who produces a wide range of intricate and predominantly sweet items, including hand finished chocolates, candies and petit fours, hot and cold desserts, cakes, biscuits and iced products. They may also produce elaborate display or themed pieces for special events.

Pâtisserie and confectionery cooks possess artistic talent and gastronomic flair alongside the ability to work effectively and efficiently using a range of specialist equipment and high-quality ingredients. The expert possesses a profound respect for these ingredients, appreciating what they bring to the product and working with them to high levels of creativity, taste, food hygiene and health and safety. Familiarity with flavours and textures, measuring and mixing basics, as well as variations in palates and preferences is a definite “plus” for the expert in this field.

The specialist Pâtisserie and confectionery cook is likely to work in top class hotels or restaurants. Some countries have specialist retail shops with dedicated areas in which they display and sell hand-made and decorated pastry products, cakes and confectionery — which are nearly irresistible and which highlight the skills and talents of the Pâtisserie and confectionery cook.

RESTAURANT SERVICE

The restaurant service practitioner provides food and drink service to guests in a broad variety of settings — most likely great numbers of us have enjoyed the skill, knowledge and welcoming attitude of the best in this field. The food service practitioner is likely to work in a hotel or restaurant where the size, nature and quality of establishments can vary enormously. Restaurant service also offers the opportunity to gain employment in internationally renowned hotels and hotel chains to smaller, privately-owned, more intimate restaurants.

High quality food and drink service requires an extensive knowledge of international cuisine, beverages and wines. The restaurant service practitioner must have a complete command of specialist tools and materials, accepted serving rules and must know and understand the preparation of speciality dishes and drinks at the guests’ table or in the bar. The food server is often the key to guests’ appreciation of the meal experience, so positive attitude, resourcefulness, assurance, smart appearance, and practical skill and ability are all essential.

Most important to providing the memorable experience and the likelihood of return business is safeguarding the health and wellbeing of both guests and colleagues through scrupulous attention to personal hygiene and safe and hygienic working practices.



TRANSPORTATION AND LOGISTICS



AIRCRAFT MAINTENANCE

An aircraft maintenance technician may work on commercial or private aircrafts, applying a range of highly skilled tasks and processes including inspection, servicing, troubleshooting, removal, installation, rigging, testing, and repairing.

While a technician might specialize on a particular type of aircraft, in all cases they will exhibit strong organization and self-management, communication, and interpersonal skills. The ability to solve problems and work safely — always adhering to industry regulations and manufacturers' instructions are the universal attributes of the outstanding aircraft maintenance technician.

As a part of a worldwide industry and in a time of 24/7 global travel, the aircraft maintenance technician faces rapidly expanding opportunities and exciting challenges in commercial and private aviation — even including travelling into space.



AUTOBODY REPAIR

Autobody repairers have a challenge familiar to many of us: to return a vehicle damaged by collision to a condition of operation, safety, and appearance as close as possible to its pre-collision state. The repaired vehicle must also conform to a stringent set of specifications from the vehicle manufacturer.

An autobody repairer needs to be familiar with mechanical components and their function, as well as the specific and often complex safety restraint systems fitted to modern vehicles. They will diagnose the direction and extent of misalignment and damage to the car body, parts, and systems. Working with a variety of specialized tools, and with minimum disruption to the vehicle — the repairer removes damaged elements and re-attaches and realigns panels to reinstate the integrity of the body shell. These panels may be welded, bolted, or riveted. The work is complete when the vehicle is in a condition ready for refinishing by a car painter.





AUTOMOBILE TECHNOLOGY

The automobile technology technician is likely to be employed in a workshop or garage that may be associated with either a single manufacturer of light vehicles or a variety of vehicles. Servicing requires knowledge and skill using a variety of equipment, parts, and materials. Garage and workshop success is measured in time, correct fault finding and repair, and repeat business.

The light automobile sector is volatile — being dependent on the wider economy, and impacted by technological advances and environmental concerns. The highly skilled automobile technician keeps abreast of continuous changes in the sector, whether these are regarding performance, safety or green energy sources. They will deeply understand vehicles' electrical and electronic systems and their integration; have physical stamina, coordination and kinaesthetic skills; and be versatile. With these skills and this approach, they will be assigned the more complex diagnostic tasks, the most advanced vehicles, and those incorporating the latest technologies.

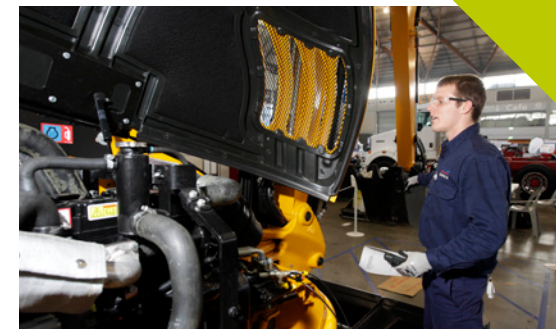
HEAVY VEHICLE MAINTENANCE

The heavy vehicle maintenance technician maintains and repairs large and heavy equipment. This equipment can be stationary (for example: diesel electric standby generators) or mobile (for example: road building equipment, and mining and forestry machines).

The technician diagnoses and corrects a vast variety of faults that can occur in any of the components or systems of heavy equipment. These skills demand a knowledge of engines, hydraulics, electronics, braking systems, and much more. It is vital to measure precisely using specific tools, interpret technical manuals, write service reports, and ensure that work meets specifications.

The technician must adapt to the diversity of heavy equipment, rapid changes in technology, and the need for quick intervention. Technicians must be able to work varied hours and locations as equipment can require quick intervention, often at a worksite or customer's shop.

The trade of heavy vehicle maintenance is very rewarding for those with mechanical aptitude who enjoy problem-solving and achieving expertise with precision work.



CAR PAINTING

Car painters (refinishers) are responsible for reinstating the pre-accident paint colour and finish to vehicles after the panels, structure, or entire car have been repaired or replaced. Car painting requires professionals to refinish a wide variety of materials such as metals, plastics, composite materials or wood.

Car painters prepare surfaces to receive paint, which may involve making minor repairs; they then apply undercoats, colour coats and sealant coats — which provide the high gloss levels required. They may be required to identify a colour code using various methods, mix the colour to a pre-determined formula and spray test cards to check the suitability of the colour match to the original colour and shade. Typically they will apply paints inside an enclosed spray booth in order to protect the environment.

Often, a car painter works on several vehicles at one time, requiring a keen awareness of overall schedule, as well as the time it takes to apply and dry individual coats and finishes.

Car painters have opportunities to work on passenger cars, high-performance racing cars, high-price and unique vintage and classic vehicles, commercial vehicles, and even trains, aeroplanes, static structures, or furniture.





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