




Careers with Majors in MATHEMATICS or APPLIED MATHEMATICS

Career	Description – What do they actually do?	Areas of Employment	Degree Name	Duration	Campus Location	Entry Requirement	Point Range	CAO Code
 Actuarial Analyst	An Actuarial Analyst applies analytical, statistical and mathematical skills to financial and business problems. Actuarial analysts who work in the insurance industry use statistical models to analyse data and calculate the probability of and costs associated with certain events, such as product failure, accidents, property damage, injury, and death. They use the results to design and price insurance policies. They also estimate the likelihood of catastrophic events, such as hurricanes, earthquakes, pandemics, and terrorist attacks, as well as assess the risk exposure of insurance companies. In South Africa you can join the actuarial profession and write the examinations with any Mathematical and Statistical based degree.	<ul style="list-style-type: none"> Insurance Industries Investment Industries Banks Healthcare Industries 	B Sc Stream M (Mathematics) Majors in Maths and Statistics	3yrs	PMB WST	NSC Deg with Math level 5 and English & LO level 4 and either Agric Sci or Life Sci or Phys Sci level 4 Post-graduation: Further registration and board examination by the Actuarial Society of SA is required.	30-48	KN-P-B53 KN-W-B53
 Algorithms Engineer	Algorithm engineering focuses on the design, analysis, implementation, optimisation, profiling and experimental evaluation of computer algorithms, bridging the gap between algorithm theory and practical applications of algorithms in software engineering. It is a general methodology for algorithmic research. Create cost effective scalable systems and develop innovative algorithm solutions. Typically an Algorithms Engineer would: <ul style="list-style-type: none"> Manage the design, development and deployment of scalable, high volume and real time systems. Research algorithm improvements and implement data processing. 	<ul style="list-style-type: none"> Banks Research Institutes Government departments Provincial administrations Self-employment as a consultant 	B Sc Stream M (Mathematics) Majors in Maths / Applied Maths / Computer Science / Statistics	3yrs	PMB WST	NSC Deg with Math level 5 and English & LO level 4 and either Agric Sci or Life Sci or Phys Sci level 4	30-48	KN-P-B53 KN-W-B53
 Astronomer	Astronomers apply the principles of Physics and Mathematics to learn more about the universe. They gather data on the characteristics of planets, moons, stars and other objects using telescopes and computer programmes. Astronomers usually specialise in certain types of celestial bodies or events, such as black holes. Typical duties include developing and testing scientific theories, analysing data and writing research proposals. They compose scientific papers and present their findings to others in the field.	<ul style="list-style-type: none"> HartRAO SAAO, SA SKA MeerKAT Universities or Colleges Planetariums 	B Sc Stream M (Mathematics) Majors in Maths / Applied Maths / Physics / Astronomy (Wst only)	3yrs	PMB WST	NSC Deg with Math level 5 and English & LO level 4 and either Agric Sci or Life Sci or Phys Sci level 4	30-48	KN-P-B53 KN-W-B53

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 Astrophysicist	Astrophysicists seek to understand the universe and our place in it. At NASA, the goals of astrophysics are “to discover how the universe works, explore how it began and evolved, and search for life on planets around other stars,” according to NASA’s website. Astrophysics is a branch of space science that applies the laws of physics and chemistry to explain the birth, life and death of stars, planets, galaxies, nebulae and other objects in the universe.	<ul style="list-style-type: none"> HartRAO SAAO, SA SKA MeerKAT Universities or colleges, teaching physics, mathematics or astronomy Museums Government agencies Research organisations Biotechnology companies Planetariums Private organisations 	B Sc Stream M (Mathematics) Majors in Maths / Applied Maths / Physics / Astronomy (Wst only)	3yrs	PMB WST	NSC Deg with Math level 5 and English & LO level 4 and either Agric Sci or Life Sci or Phys Sci level 4	30-48	KN-P-B53 KN-W-B53
 Cosmologist	Cosmology is the discipline of science that studies the origin and eventual fate of the universe. It is most closely related to the specific fields of astronomy and astrophysics, though the last century has also brought cosmology closely in line with key insights from particle physics. Modern cosmology connects behaviour of the largest structures in our universe (planets, stars, galaxies, and galaxy clusters) together with those of the smallest structures in our universe (fundamental particles).	<ul style="list-style-type: none"> HartRAO SAAO, SA SKA MeerKAT Universities or Colleges Planetariums 	B Sc Stream M (Mathematics) Majors in Maths / Applied Maths / Physics / Astronomy (Wst only)	3yrs	PMB WST	NSC Deg with Math level 5 and English & LO level 4 and either Agric Sci or Life Sci or Phys Sci level 4	30-48	KN-P-B53 KN-W-B53
 Cryptographer	Cryptography refers to mathematically based encryption methods that keep data away from the prying eyes of criminals or enemy governments. It provides a way to keep messages and other data secret and is the art of writing or solving symbols. Cryptographers figure out different ways to encrypt information. Those who decipher information from encrypted messages without knowing the original key are called cryptanalysts. In IT security, cryptography is important in achieving data confidentiality, data integrity and user authentication.	<ul style="list-style-type: none"> Insurance Industries Investments Industries Banks Security Firms 	B Sc Stream M (Mathematics) Majors in Maths / Applied Maths / Computer Science	3yrs	PMB WST	NSC Deg with Math level 5 and English & LO level 4 and either Agric Sci or Life Sci or Phys Sci level 4	30-48	KN-P-B53 KN-W-B53
 Mathematical Modeller	Mathematical modellers use mathematical models to illustrate processes or solve complex problems. Many mathematical modellers use their mathematical modelling skills along with software technology to create and animate 3D representations of processes. Modellers encode the main features of the process with equations, and then simulate it. Mathematical modellers work in many different industries from aerospace to biology.	<ul style="list-style-type: none"> Mining industry Computer Programming firms Schools, Colleges and Universities Research Institutes Consulting agencies Government departments 	B Sc Stream M (Mathematics) Majors in Maths / Applied Maths / Computer Science / Statistics	3yrs	PMB WST	NSC Deg with Math level 5 and English & LO level 4 and either Agric Sci or Life Sci or Phys Sci level 4	30-48	KN-P-B53 KN-W-B53



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