ECST
Engineering College of Science and Technology.

Watch Webinar Recording Here

Engineering Careers in South Africa – Where Are The Opportunities ?



Presented by: **Eldridge Mapfumo**
(ECST – Academic Head)

Conversation with Mr. Simiso Mthembu
Production Manager: Defy Appliances

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

About ECST

ECST
Engineering College of Science and Technology.

To provide accessible, industry-relevant engineering education that equips school leavers and other motivated learners with practical skills, mentorship, and real-world experience, empowering them to transition confidently into meaningful employment, entrepreneurship, and community impact in South Africa and beyond.



Affordable, Career-Ready Education



Flexible Blended Learning Model



Clear Pathway to International Master's Degrees*



Hands-On, Practical Skills



Taught by Experienced Engineers



Centrally Located in Midrand



Engineering-Focused Institution

* Terms & Conditions Apply

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

ECST Programmes

Engineering College of Science and Technology (ECST) *South African accredited qualification & ECSA-endorsed*
Bachelor of Engineering Technology in Electrical Engineering
Bachelor of Engineering Technology in Mechanical Engineering

2027 Applications now open

Apply: Bachelor of Engineering Technology Archives - Engineering College of Science and Technology : Engineering College of Science and Technology

ECST is provisionally registered with the DHET until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Agenda

ECST
Engineering College of Science and Technology.

5 – 10 mins		**Introduction of our Guest** Welcome and introduction of Mr. Simiso Mthembu, including a brief overview of his background, experience, and contributions to engineering education.
10 – 15 mins		**Presentation** A short PowerPoint presentation on the topic: **“Engineering Careers In South Africa – Where Are The Opportunities?"**
30 – 40 mins		**Conversation with Mr. Simiso Mthembu** A moderated discussion exploring key questions, opportunities, and challenges related to Engineering Careers in South Africa.
Up to 10 mins		**Questions and Answers** Live questions from the audience.
5 mins		**End of Webinar Session** Closing remarks, key takeaways, and a thank you to our guest and participants.



The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Introduction – Presenter

Eldridge Mapfumo



Eldridge Mapfumo is our ECST academic leader and engineering professional with over a decade of experience in higher education, engineering consulting and project leadership. He specialises in academic programme development, curriculum design, quality assurance and regulatory compliance.

He holds Bachelor's and Master's degrees in Mechanical Engineering from Russia, a Postgraduate Diploma in Higher Education (cum laude), and is completing a PhD in Industrial Engineering. He has also contributed to academic leadership, student development and strategic collaboration within the higher education and engineering sectors.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Our Guest : Mr Simiso Mthembu



Production Manager | Defy Appliances

Mr. Simiso Mthembu is a seasoned engineering and manufacturing professional with over 20 years of industry experience. He is currently Components Production Manager at Defy Appliances. Throughout his career, he has held various technical and management positions, including Workshop and Line Manager at Alstom Group and Senior Product Engineer at Smiths Manufacturing.

He holds qualifications in Mechanical Engineering, Project Management, Business Management, and Operations Management. His expertise spans engineering, manufacturing operations, and leadership.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Where can engineering take you?

Engineering College of Science and Technology.

ENERGY & UTILITIES

Power generation • transmission • renewables • storage • water systems

BUILT ENVIRONMENT

Roads • bridges • buildings • housing • water and sanitation

INDUSTRY & RESOURCES

Mining • metals • manufacturing • food • chemicals

MOVEMENT & DIGITAL

Rail • ports • automotive • telecoms • data centres

The opportunity is often found where systems need to be built, maintained, made safer, or made more efficient.

- Public infrastructure programmes and private investment create work across planning, design, construction and operations.
- Existing assets also need inspection, maintenance, upgrades, energy efficiency and reliability improvements.
- Engineering careers can sit in industry, consulting, government, utilities, contractors, suppliers or your own business.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Opportunity map: sectors and real work

ENERGY

Grid connections • solar/wind projects • substations • power quality • energy efficiency

MINING

Mine equipment • ventilation • plant reliability • mineral processing • safety systems

MANUFACTURING

Production lines • tooling • quality • maintenance • lean processes • product development

CONSTRUCTION & WATER

Civil works • project controls • water treatment • roads • structures • asset management

TRANSPORT & LOGISTICS

Rail systems • ports • fleet maintenance • vehicle systems • logistics optimisation

AUTOMATION & DIGITAL

PLCs • robotics • sensors • SCADA • industrial data • predictive maintenance

Which engineering discipline fits the work?

ELECTRICAL

Power systems • renewables • protection • control • instrumentation • EV charging

MECHANICAL

Machines • production • HVAC • rotating equipment • reliability • product design

CIVIL

Structures • roads • geotechnics • water • construction supervision • infrastructure assets

INDUSTRIAL

Process improvement • operations • supply chains • quality • systems and data

CHEMICAL / PROCESS

Minerals processing • water treatment • fuels • food • chemicals • process safety

MECHATRONICS / CONTROL

Automation • PLCs • robotics • embedded systems • sensors • smart factories

Introspection: Do I enjoy designing things, improving systems, solving field problems, managing projects, or analysing data?

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

A major opportunity area: energy & infrastructure

ENERGY TRANSITION

Renewable generation, storage, grid integration, energy audits, power electronics and electrical maintenance.

TRANSMISSION & DISTRIBUTION

Substations, line design, protection systems, grid planning, commissioning and asset management.

CORE INFRASTRUCTURE

Roads, bridges, water, sanitation, ports, rail, buildings and rehabilitation of ageing assets.

A signal to watch

In June 2025, National Treasury described a programme to accelerate new transmission infrastructure, with estimates of more than 14,000 km of new lines needed over the following decade.

Potential roles: design • project engineering • site supervision • commissioning • maintenance • environmental and safety compliance

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Manufacturing, Mining and Construction: Engineering in Action

MANUFACTURING

Improve throughput and yield; reduce defects and downtime; design tooling; validate products; manage quality.

MINING & MINERAL PROCESSING

Keep equipment reliable; improve plant performance; support ventilation, safety, maintenance and process control.

CONSTRUCTION & CONTRACTING

Coordinate technical teams; manage cost, schedule and quality; inspect work; solve site constraints.

Reality check: hiring can be cyclical.

- Statistics South Africa's March 2026 Quarterly Employment Statistics reported annual employment increases in mining, but decreases in manufacturing and construction.

Emerging technologies are changing the work

INDUSTRIAL AUTOMATION

PLC / SCADA • sensors • drives • robotics • machine vision

AI & INDUSTRIAL DATA

Predictive maintenance • anomaly detection • process optimisation • digital twins

CLEANER MOBILITY

EV systems • charging infrastructure • batteries • power electronics

ADVANCED PRODUCTION

Additive manufacturing • CAD/CAE • simulation • smart quality inspection

Build a T-shaped skill set

Strong fundamentals in maths, science and engineering + one practical digital skill + communication, teamwork and safety.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

How do you become employable?

ECST
Engineering College of Science and Technology.

01 BUILD THE BASE

Mathematics, physics, technical drawing, materials, mechanics, circuits and safety.

02 PRACTISE

Use CAD, spreadsheets, basic coding, PLCs, lab work or simulations relevant to your discipline.

03 SHOW YOUR WORK

Create a small portfolio: a design, calculation, test, improvement project or technical report.

04 GET EXPOSURE

Seek vacation work, internships, site visits, job-shadowing, mentorship and industry projects.

05 COMMUNICATE

Explain your reasoning clearly; document decisions; work respectfully with technicians and other disciplines.

06 PLAN YOUR PATH

Check role requirements and professional registration pathways with ECSA; keep learning as technology changes.

Do not wait until graduation to start building evidence of your capability.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Engineering Roles

TECHNICAL

Design • analysis • testing • R&D • commissioning • reliability

OPERATIONS

Production • maintenance • quality • process improvement • plant management

PROJECTS

Planning • contracts • cost and schedule • site coordination • project management

CUSTOMER & BUSINESS

Technical sales • applications engineering • consulting • procurement • entrepreneurship

Your first role is a starting point not a life sentence.

Build credibility, learn the business, take responsibility and keep a record of results you can demonstrate.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Turn interest into action

WEEK 1 | CHOOSE

Pick two sectors and three role titles. Read real job adverts and note the skills they repeatedly request.

WEEK 2 | BUILD

Create or improve one project example. Practise explaining the problem, your method, result and lessons.

WEEKS 3–4 | CONNECT

Contact alumni and professionals; attend industry events; apply for relevant exposure opportunities; request feedback.

Question to our guest

What separates a promising early-career engineer from someone an employer is ready to trust with responsibility?

Opportunity is a combination of industry demand, relevant capability, evidence of your work and relationships.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

GCC: a specialist route into plant responsibility

GCC (Factories)

- Commonly associated with machinery, plant and factory safety responsibilities.
- Factory GCC matters are administered through the Department of Employment and Labour.
- Eligibility and evidence of qualifications, trade training and experience depend on the applicable route.

GCC (Mines)

- Relevant to certain legally appointed roles in the mining industry.
- The Department of Mineral and Petroleum Resources administers mining certificates of competency through the Mine Health and Safety Inspectorate.
- Candidates must meet the specific route requirements and pass the prescribed examination.

What should students and graduates do?

- Treat GCC as a specialist career pathway not an automatic add-on to an engineering degree.
- Build relevant plant, maintenance, operations, safety and supervisory experience; check current requirements with the relevant authority before planning a route.

Official starting points: dmpr.gov.za (Mining GCC) | labour.gov.za (Factories GCC) • Requirements differ by certificate and may change.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Conversation with Mr Simiso Mthembu



Production Manager | Defy Appliances

Mr. Simiso Mthembu is a seasoned engineering and manufacturing professional with over 20 years of industry experience. He is currently Components Production Manager at Defy Appliances. Throughout his career, he has held various technical and management positions, including Workshop and Line Manager at Alstom Group and Senior Product Engineer at Smiths Manufacturing.

He holds qualifications in Mechanical Engineering, Project Management, Business Management, and Operations Management. His expertise spans engineering, manufacturing operations, and leadership.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Conversation with Mr Simiso Mthembu

ECST
Engineering College of Science and Technology.

1 Career journey

- Looking back, which decisions or experiences most shaped your engineering career?
- How did you move from technical roles into production and people leadership?

2 Getting the first opportunity

- What can students and new graduates do to stand out when they have limited industry experience?
- Which entry routes are realistic: internships, graduate programmes, technician roles, suppliers or contract work?

3 Skills that matter

- Which technical skills do you most value in early-career engineers?
- How important are communication, teamwork, safety awareness and problem-solving on the factory floor?

4 Where are the opportunities?

- Beyond large employers, where should young engineers look—SMEs, suppliers, maintenance firms, consulting or public infrastructure projects?
- Which sectors or roles do you think graduates often overlook?

ECST is provisionally registered with the DHET until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Conversation with Mr Simiso Mthembu

ECST
Engineering College of Science and Technology.

5 Manufacturing and technology

- How are automation, robotics, data and AI changing manufacturing jobs in South Africa?
- What should a graduate learn first to stay useful as factories become more digital?

6 Growing into responsibility

- What distinguishes engineers who progress into production, operations or plant management?
- How can an engineer balance technical depth with commercial awareness and people management?

7 GCC and specialist pathways

- For engineers interested in plant or mining responsibility, when should they start exploring GCC requirements?
- What experience and preparation should they prioritise—and where should they verify the correct route?

8 Closing advice

- If you could give one piece of advice to your 21-year-old self, what would it be?
- What one action should a student or graduate take in the next 30 days?

ECST is provisionally registered with the DHET until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

References

- National Treasury / South African Government (6 June 2025). Independent Transmission Programme transmission expansion and private-sector participation. gov.za
- South African Government (2025). State of the Nation Address: infrastructure investment, energy transition, transport and green-economy priorities. gov.za
- Statistics South Africa (March 2026). Quarterly Employment Statistics, P0277. Annual employment changes by industry. statssa.gov.za
- Department of Mineral and Petroleum Resources. Mining industry employment overview and sector context. dmpr.gov.za
- SEIFSA (19 February 2026). State of the Metals and Engineering Sector Report 2026. Conditions and risks in the metals and engineering sector. seifsa.co.za
- Note: sector examples and career suggestions in this presentation are illustrative. Project announcements and sector trends do not guarantee specific vacancies.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Key takeaways

Three takeaways

1. Engineering opportunities exist across sectors and not only in traditional engineering firms.
2. Energy, infrastructure, industrial operations and automation create different kinds of work; hiring conditions vary by sector and employer.
3. Build proof of your capability through projects, practical experience, communication and continuous learning.

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.

Contact and Information Resources

Thank you for your time and partnership.

Contact us:

enquiry@ecst.ac.za | www.ecst.ac.za | +27 10 823 4497

Campus Location: Unit 3, Elevation Gardens, Elevation Close,
Waterfall Office Park, Midrand, 1686

Visit our campus or schedule a presentation for your learners.

Our Commitment: “We are dedicated to ensuring that you receive a world-class education and gain skills that you can immediately implement in the workplace.”

The Engineering College of Science and Technology (Pty) Ltd is provisionally registered with the Department of Higher Education and Training until 31/12/2028 as a private higher education institution under the Higher Education Act, 1997. Registration certificate no. 2025/HE07/007.