Chemistry @ Unisa

A guide to preparing for career opportunities

Define tomorrow.

UNISA university of south africa

Contents

The information in this publication is correct as of 30 November 2025. Visit the Unisa Counselling and Career Development downloads page to check for updates.

Please check the Unisa qualifications webpage (http://www.unisa.ac.za/qualifications) regularly for updates related to available qualifications and the admission requirements to study.

How will this brochure help you?

- It will provide you with some insight into what studying chemistry involves.
- It will help you to explore the career opportunities and work environments linked to chemistry.
- It will help you gain more information about the skills needed in the field of chemistry.
- It will assist you with finding relevant qualifications offered by Unisa.

What problems do you want to solve

“Don’t ask kids what they want to be when they grow up but what problems they want to solve. This changes the conversation from who do I want to work for, to what do I need to learn to be able to do that.”

Jaime Casap, Google Global Education Evangelist

One way to think about your career is by focusing on the **problems you care about**, not only on job titles. This shifts the question from *“What do I want to become?”* to *“What do I want to contribute?”*

Activity

1. Write down some problems or challenges you care about — in your family, community, South Africa, Africa, or the world.
2. Think about how you might contribute to solving them.
3. Ask: *What skills or knowledge would I need to prepare myself for that role?*

Example: If you care about pollution, different professionals can contribute in different ways: engineers design cleaner cars, environmental managers research recycling methods, policymakers create emissions laws, and chemists develop new materials.

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Understanding chemistry

Before you start: Why choose chemistry?

Before considering pursuing this field of study, here are some basic questions you can ask yourself:

- Why are you interested in studying chemistry?
- Where does your interest come from?
- Where are you hoping to be in five years? In ten years?
- What opportunities are you hoping to prepare for by completing a qualification in this field?

What is chemistry?

Chemistry is everywhere around us; it is in our food, water, and clothing – everything you see and touch involves chemistry. Chemistry will help you make sense of and understand your world. How are balloons made? How does dishwashing liquid turn the water soapy? It helps us understand the physical world we live in, and it forms the basis of all other sciences.

Chemistry involves the study of substances and matter and their components, including composition, properties, structure and reactions of molecules, atoms and systems. Understanding these components provides pertinent information that assists in understanding the changes they undergo and in the creation of further matter by combining and separating their components to form new matter.

The Unisa Department of Chemistry offers the undergraduate degrees, Bachelor of Science (BSc) and Bachelor of Science Honours (BSc Hons), by distance education. Arrangements are made for students to complete the required laboratory work at the Unisa campus in Pretoria, or at an official location elsewhere.

The undergraduate BSc degree includes studies of the four major disciplines in chemistry, namely, Analytical, Inorganic, Organic and Physical Chemistry. At the postgraduate level, BSc Honours students study industrial chemistry and quantum chemistry, as well as having the opportunity to study modules such as spectroscopy, chemical education, material science, polymers, platinum group metals, chromatographic analysis, and many more. The

department also has facilities for further postgraduate degrees at the Master's and Doctorate levels in various research areas.

There are various branches of chemistry, including:

- **Analytical chemistry:** The focus is on the analysis of chemical components.
- **Biochemistry:** This field of study covers the chemical processes of a living organism.
- **Inorganic chemistry:** This is the study of non-organic or non-living substances (that do not contain a carbon-hydrogen bond).
- **Organic chemistry:** Organic chemistry is the study of compounds that consist of carbon and hydrogen and focus on what plants and animals need to survive.
- **Physical chemistry:** This is the study of the behaviour of certain matter and its physical arrangement. This includes the rate of reactions and what causes a reaction to occur.

Skills needed for a career in chemistry

- Scientific and technical knowledge
- IT and computer skills
- Communication skills
- Interpersonal skills
- Data collection and analysis
- Critical thinking
- Problem solving
- Time management.

Opportunities in chemistry

Job opportunities and work environments

Possible job titles

- Analytical chemist Chemist/ Chief Chemist
- Compliance adviser/ consultant
- Consultant (e.g. sustainability)
- Environmental consultant
- Forensic analyst/ scientist
- Journalist/ writer
- Laboratory technician/ manager
- Lecturer
- Nanotechnologist
- Policy advisor
- Product developer/ manager
- Project manager
- Quality assurance consultant/ manager/ specialist
- Regulatory adviser/ consultant
- Research scientist
- Scientist
- Teacher (with teaching qualification)
- Technical sales representative/ manager
- Toxicologist

Possible work environments

- Fast-moving consumer Goods (FMCG) industry (e.g. food manufacturing, consumer goods manufacturing – non-foods)
- Higher Education Institutions (Private and public)
- Hospitals
- Media industry

- Mining industry
- Pharmaceutical companies
- Research centres and institutes
- Research laboratories
- Schools
- South African Police Service

Explore further

Read more about the wide range of applications of chemistry in the world of work here:

- American Chemical Society
- Royal Society of Chemistry
- Royal Australian Chemical Institute

Exploring and researching careers

Making informed career decisions means going beyond what you already know. Career research helps you explore opportunities in chemistry, understand what employers are looking for, and identify the steps you can take to prepare yourself.

Try this:

Here are some simple activities to help you explore opportunities in chemistry. Choose 2–3 to start with:

1. **Online search**
   Search “career in chemistry South Africa” or “entry-level jobs in analytical chemistry” and make a list of the qualifications and skills mentioned.
2. **Occupational information websites**
   Visit the South African Department of Higher Education and Training’s *National Career Advice Portal*. Search for “chemist” or “laboratory technician” and read about work activities, skills, and job outlook.
3. **Job search portals**
   Check portals like Indeed, Career Junction or PNet. Type in “chemist” or “quality control analyst” and see which employers are currently hiring and the requirements.

4. **LinkedIn**
   Search for Unisa alumni who studied chemistry and see where they work now. What career paths do they follow?

5. **AI tools**
   Use ChatGPT or Google Gemini to ask: “What are emerging careers in chemistry in South Africa?” Compare the results with what you see on job portals.

6. **Talk to others**
   Set up an informal chat with someone working in a chemical lab, teaching chemistry, or doing research, to learn more about their career journey and daily work.

7. **Attend a careers fair**
   When Unisa or professional organisations host career fairs, look for employers related to chemistry. Prepare 2–3 questions to ask them about entry routes into the profession.

8. **Join a professional organisation**

- The South African Chemical Institute
- Society of Cosmetic Chemists South Africa
- Final year Natural Science students can enrol with the South African Council for Natural Science Professions.

9. **Volunteering**
   Look for volunteering or vacation work opportunities in labs, schools, or community science projects. Note the skills you develop through these experiences.

For more detailed steps and extra activities, see our Career Research brochure.

Preparing while you study

Many students believe that a degree will lead directly to a specific job. In reality, your career path is shaped by more than your major. It is also about the **skills you build, the experiences you gain, and how you prepare along the way**. While you study, there are many things you can do to get ready for opportunities.

Your degree is one part of your career journey. By building skills, gaining experience, keeping a portfolio, and investing in your confidence, you'll be better prepared for opportunities during and after your studies.

Develop your transferable skills

Your studies give you subject knowledge and valuable skills such as problem-solving, critical thinking, working independently, and adapting to new situations. Reflect on what you're learning and practise explaining these skills in ways that employers will understand.

Activity

- List three skills you've strengthened this year and one example of how you've used each.
- List three skills you intend to strengthen and how you plan on doing so.

Build a career portfolio

A portfolio helps you keep track of your achievements, experiences, and goals. Include your skills, certificates, volunteering, work experience, and career ideas. Over time, this will become a powerful tool for applications and interviews.

Useful resource

- Unisa Career Portfolio

Gain experience (volunteering or part-time work)

Getting experience outside your coursework helps you explore fields of interest, build networks, and develop workplace skills. Volunteering is especially valuable when done responsibly and with respect for the community.

Think about

- Which organisations could benefit from your skills?
- What could you gain in return (skills, networks, insights)?
- How will this experience link to your career goals?

Enhance your employability

Employability means your ability to get, keep, and grow in fulfilling work. Today's careers are flexible: people change jobs and industries often, and success can mean many different things. You can boost your employability by:

- Managing your personal brand (how others see your professionalism).
- Developing job search skills (CVs, cover letters, interviews, networking).
- Exploring flexible career paths and lifelong learning opportunities.

Useful resources:

- Unisa Prepare for Job Opportunities
- Counselling and Career Development YouTube channel
- PNet Grad Pack
- GradNext

Grow your self-confidence

Believing in your ability to succeed is just as important as skills and knowledge. Low self-confidence can hold you back from studying effectively, applying for opportunities, or connecting with others.

Ways to strengthen your confidence:

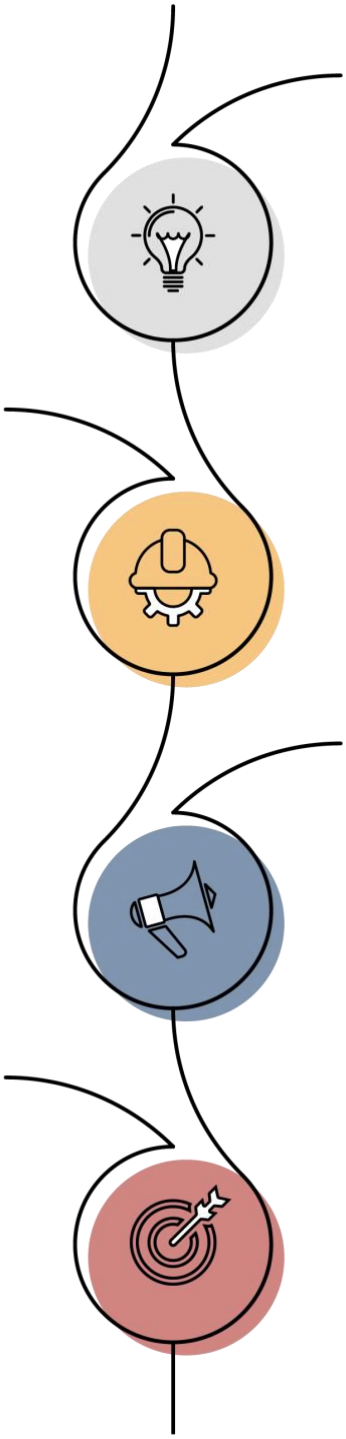
- Focus on your strengths and successes.
- Ask for help when needed — it's a sign of strength, not weakness.
- Practise self-talk that encourages growth instead of fear.

Remember: confidence grows with action. The more you try, the more you'll believe in yourself.

Your roadmap to success

Embarking on a career journey while studying can feel exciting and overwhelming. This roadmap will guide you year by year, helping you to stay intentional, informed, and adaptable.

Careers are rarely straight lines. Think of this roadmap as a flexible guide: you can move between stages depending on your opportunities and goals.



Year 1: Explore and build foundations

- Reflect on your interests, strengths, and career goals.
- Research career paths linked to your qualification.
- Plan your modules and think about postgraduate options.
- Identify key employability skills to develop.
- Create a basic CV and LinkedIn profile.
- Join a student or professional organisation.

Year 2: Grow and gain experience

- Focus on excelling in your studies.
- Apply for internships, part-time jobs, or volunteer work.
- Attend workshops, webinars, or conferences.
- Gain certifications (if relevant).
- Expand your professional network.
- Update your CV and portfolio with new experiences.

Year 3: Refine and specialise

- Revisit your career goals and explore specialisations.
- Connect with alumni and seek mentorship.
- Strengthen your professional presence (LinkedIn, portfolio, personal website).
- Practise with mock interviews and improve communication skills.
- Contribute to professional discussions online or at events.

Final Year: Launch your career

- Start an intentional job search (LinkedIn, job boards, company websites).
- Tailor your CV and cover letters for each application.
- Practise interviews and refine your elevator pitch.
- Attend career fairs and networking events.
- Evaluate and negotiate job offers with guidance from mentors.
- Commit to lifelong learning and professional development.

My career learning plan: Next steps

Your next step is to plan how you will get the information that you still need to make optimal career decisions. Use SMART goals to help you plan your career research.

S – Specific: What exactly do I want to find out?

M – Measurable: How will I know I've done it?

A – Achievable: Can I realistically do this step?

R – Relevant: Does this help me make better career decisions?

T – Time-bound: By when will I do it?

What career questions do I still need answers to?

My career question	What steps will I take?	By when?	Who/what can help me?	Done?	What's next?
E.g. What jobs can I do with a chemistry qualification?	Search LinkedIn profiles of Unisa chemistry graduates	15 Oct	LinkedIn, Alumni page	Yes	Connect with 3 alumni

Career planning is not about having all the answers right now. It's about staying curious, setting small goals, and building momentum.

Study opportunities at Unisa

Undergraduate qualifications in chemistry

College of Science, Engineering and Technology

- Bachelor of Science Chemistry and Applied Mathematics (98801 - CAM)
- Bachelor of Science Chemistry and Computer Science (98801 - CCS)
- Bachelor of Science Chemistry and Information Systems (98801 - CIS)
- Bachelor of Science Chemistry and Physics (98801 - CAP)
- Bachelor of Science Chemistry and Statistics (98801 - CAS)
- Bachelor of Science General (98801 - GEN)
- Bachelor of Science Mathematics and Chemistry (98801 - MAC)

College of Agriculture and Environmental Sciences

- Bachelor of Science in Environmental Management Chemistry (98052 - ECH)

One of the admission requirements for the above BSc degrees is that you need to have completed Mathematics and Physical Science as subjects on Grade 12 level. If you took these subjects but your percentage was below the requirement for the BSc degree, then you will need to explore the option of applying for a Higher Certificate in the College of Science, Engineering and Technology. Completing a relevant Higher Certificate programme will enable you to meet the requirements for a degree.

College of Economic and Management Sciences:

- Bachelor of Business Administration (98316 - BBA)

If you do not meet admission requirements for the undergraduate qualification in the College of Economic and Management Sciences, then you will need to explore the option of applying for a Higher Certificate offered in the College of Economic and Management Sciences. Completing a relevant Higher Certificate programme will enable you to meet the requirements for a diploma or degree.

Visit the Unisa website at http://www.unisa.ac.za/qualifications for more information about the admission requirements for these degrees.

Postgraduate qualifications in chemistry

Honours degrees

- Bachelor of Science Honours in Chemistry (98919)

Master's and PhD

- Master of Science in Chemistry (Full Dissertation) (98975)
- Master of Science in Chemistry Education (Full Dissertation) (98963)
- Doctor of Philosophy in Chemistry (98976)

Read more about the Research Focus Areas here.

Frequently asked questions

I did not complete mathematics and/or physical science at matric level – can I study chemistry at Unisa?

For the Colleges of Science, Engineering and Technology and Agriculture – no. The admission requirements stipulate that mathematics is one of the requirements. If you did not complete mathematics in matric, you cannot gain access to any of the BSc degrees. More information about the Unisa admission requirements:

College of Science, Engineering and Technology

College of Agriculture and Environmental Sciences

College of Economic and Management Science

I completed maths and science, but my marks were below 50% – what can I do?

You will need to consider applying for admission to a Higher Certificate offered in the College of Science, Engineering and Technology. Visit the Unisa website for more information about the available Higher Certificates and their requirements. Completion of a Higher Certificate does not guarantee you admission to a further qualification since the University also considers the number of available spaces for a specific qualification. Read more about the role of the higher certificate qualifications here.

Is there a practical component to chemistry qualifications?

Yes. The degrees related to chemistry contain practical modules at each level of study. Arrangements are made for students to complete the required laboratory work at the Unisa Science campus.

Can I change from one qualification to another?

You can apply for admission to a new qualification. Note that you must ensure that you meet the relevant admission requirements for the proposed qualification. Once the application is approved, you can register in the next registration period and apply for the transfer of relevant credits, if applicable.

I want to become a life sciences teacher. What should I study?

You must complete a Bachelor of Education degree. Alternatively, you can complete a Bachelor's degree with the relevant school subjects included and then apply for admission to the Postgraduate Certificate in Education. Read more about the available qualifications and admission requirements here.

Counselling and career development services at Unisa

The Unisa Directorate for Counselling and Career Development offers career, academic, and personal counselling services to Unisa students and the broader community. You can talk to a counsellor about:

- **Career decisions.** I am not sure which career path to follow; I don't know which qualification would be best; I want to change my career direction…
- **Career information.** How can I find out more about a career in …
- **Employability.** How do I market myself to employers? How can I look for work? How can I compile an effective CV? How do I go about networking with others? How do I put together my career portfolio? How can I meet potential employers? How can I improve my interview skills?)
- **My studies at Unisa.** How can I get started with my studies? How do I plan my studies? How can I study more effectively? I don't feel motivated to continue with my studies… I feel worried about preparing for/ writing the exams. I failed my exams – what now? I need to improve my reading/ writing/ numeracy skills
- **Personal issues and mental health.** How can I have better relationships with others? How can I cope more effectively with issues that impact my studies?

Contact us

- Send an email to counselling@unisa.ac.za.
- Make an appointment to see a counsellor:
  - In-person at a Unisa Centre
  - Online (on MS Teams)

Further self-help resources for career, academic and personal development

Our website: www.unisa.ac.za/counselling

Our YouTube channel: www.youtube.com/unisacareers