

## **Advanced Wastewater Treatment & Water Quality Management Workshop** “Modern to Future Cost-Effective Methods of Wastewater Treatment”

Johannesburg: 26<sup>th</sup> – 28<sup>th</sup> November 2025

Durban: 3<sup>rd</sup> – 5<sup>th</sup> December 2025

Virtual: On Microsoft Teams


Venue: Protea by Marriott Hotel Johannesburg Wanderers

### **Workshop Overview.**

The course is designed to provide a critical problem-solving approach for application to pollution solutions and to extend attendee’s knowledge of water quality concepts and issues, trends in water quality remediation and wastewater management practices. It will present a comprehensive overview of the water management, water allocation, and water pollution prevention legislation and modern for parameter analysis and water quality monitoring.

Our course focuses on cause and effects of water pollution and water quality degradation from a range of sources. This **Alliance Training and Conferencing** workshop presents information on the required prototype shift from wastewater treatment and resource recover including strategies for integration of ecological systems during wastewater and effluent treatment. On the last day, a site visit will be conducted, and this will equip all our attendees with relevant physical skills required in water sector for management, technological and operation decision making individuals to protect water resources in South Africa and Africa as a continent. On completion of the course all the attended professional will received a 3CPD accredited certificate and training manuals.

To stay updated follow, us on LinkedIn 

 +27(0)10 023 3396

 [info@alliancetc.co.za](mailto:info@alliancetc.co.za)

 [www.alliancetc.co.za](http://www.alliancetc.co.za)

## *Our experienced facilitators*



**Rachhi Rajagopaul**

Rachigan brings over 35 years of experience as a senior scientist at Umgeni Water, one of the largest water suppliers in the KwaZulu-Natal province. Throughout his career, he has successfully developed and mentored more than 40 in-service trainees and graduate engineers, many of whom now hold critical positions in the water sector, including Works Managers, Process Engineers, Technologists, and Technicians. His former trainees have also secured roles in prominent organizations such as Eskom, Mondi, and various municipalities.

Rachigan holds a Master's Degree in Chemical Engineering (ECSA Registration No. 201270127) and is deeply passionate about creating a comprehensive training program for chemical engineers and technicians aimed at achieving the necessary proficiencies for Engineering Council of South Africa (ECSA) registration. His commitment to professional development in the engineering field is evident in his dedication to fostering the next generation of industry leaders. Educational Qualifications: Master's Degree in Technology (Chemical Engineering



**Prof. Evans Chirwa**

Prof Evans Martin Nkhalambayausi Chirwa is a Full Professor in the Department of Chemical Engineering at the University of Pretoria, where he researches advanced water treatment for application in water reclamation and creation of new water. He holds the following degrees: BSc (Civil Engineering) from the University of Malawi, MSc (Civil Engineering) and PhD (Civil Engineering from the University of Kentucky (USA). During his tenure at the University of Pretoria, he has published 230 papers in peer-reviewed journals, over 144 papers in peer-reviewed conference proceedings, and 12 book chapters.

In addition, he has produced 26 PhD and 52 MSc/MEng graduates in the past sixteen years. He has served as an invited keynote speaker at GCCE, AIDIC, WEFTEC, IWA and other international conferences. He currently serves as editor for the acclaimed international water research journal Water Science and Technology, published by the International Water Association (IWA) Publishers in the United Kingdom.

The demand for water will continue to expand as the country's population increases as well as social and economic conditions improve in South Africa and Africa as a continent, therefore this will accumulate constraint on the country's scarce water resources and concurrently, increasing potential threats to water quality. Water quality management, must be undertaken within these realities of increased socio-economic development and meeting the water user requirements for specific circumstances and matching them with appropriate measures to ensure on-going beneficial and sustainable water use.

South Africa policies and strategies for water quality management are advanced with reference to international practice, however there are still lessons to be learnt from emerging and innovative approaches. To adequately inform the policy and strategies, the current and potential future water quality challenges needs to be understood.

Advanced water treatment is now a necessity as society mitigates the impacts of increased population, urbanization, industrialization, and the depletion of potable water. Wastewater treatment can not always treat wastewater efficiently, which can generate several concerns including odor issues and health problems.



To keep up with these challenges, new techniques are implemented to treat wastewater. With the application of these treatment technologies, it is possible to further improve the quality of wastewater beyond the limitations of conventional technologies to achieve the goal of resource recovery or resource conservation. Advanced wastewater treatment plant effluents may be recycled directly or indirectly to increase the available water supply.

New treatment technologies can remove a wide range of challenging contaminants from wastewater successfully. As South Africa and the world grapples with shrinking water resources, advanced treatment will become critical to recovering water resources for both potable and non-potable uses.

### Course Objectives:

Upon successful completion of this course, the delegates will be able to;

- ❖ Describe the purpose of a water quality management systems.
- ❖ Understand the key fundamentals and processes of a water quality management systems
- ❖ Understand and apply the requirements water quality management systems in the context of an audit.
- ❖ Manage audit communication, interviews, report and follow up on a water quality management systems.
- ❖ Design and apply principles of advanced treatment technology.
- ❖ Undertake socio-technical analysis for the selection of suitable wastewater treatment technologies.
- ❖ Perform calculations related to the activated sludge and clarification.
- ❖ Interpret the results from those calculations.
- ❖ Understand to application of the green drop.
- ❖ Design a detailed analysis for an advanced water and wastewater treatment system, for treating process problems and selecting appropriate processes methods that target emerging pollutants, as to meet specified water quality requirements.
- ❖ Provide recommendations of appropriate treatment processes for upgrading water and wastewater treatment efficiency.
- ❖ Determine appropriate disposal options to mitigate risk of downstream re contamination from treatment technologies by-products.
- ❖ Identify and categorize different types of wastewater.

### Organizational Impact:

- ❖ Enable competence in new and revamped wastewater process projects.
- ❖ Ensure that the right effluent treatment technology is selected.
- ❖ Improve awareness when communicating with vendors and consultants.

### Personal Impact:

- ❖ Improve skills and impact on the development of effluent treatment projects.
- ❖ Promote creativity in the selection and specification of new wastewater treatment plant
- ❖ Enhance ability to troubleshoot and improve existing wastewater installations



- ❖ Familiarize with the latest developments in effluent treatment technology.
- ❖ Manage audit communication, interviews, report and follow up on a water quality management systems.
- ❖ Describe the purpose of a water quality management systems
- ❖ Perform calculations related to the Activated Sludge & Clarification Processes

## **Who Should Attend:**

- ❖ Water Engineers.
- ❖ Process Engineers
- ❖ Process Controllers
- ❖ Water Quality Specialists
- ❖ Water Boards.
- ❖ Plant Technicians
- ❖ Plant Managers
- ❖ Officials involved in wastewater treatment
- ❖ Environmental Health Practitioners
- ❖ Chief Executive Officers
- ❖ Civil Engineers
- ❖ Project & Investment Managers
- ❖ Heads of Development & Sustainability
- ❖ Finance Directors Corporate Affairs Directors
- ❖ Municipality Water Heads, Department of Water Affairs, Water Boards
- ❖ Product Innovation and Development Managers
- ❖ Consulting Engineers , Chemical Engineers
- ❖ Water Scientists, Technologists /Technicians
- ❖ Water Management Advisors, Planning Managers/Engineers/ Project Managers

## **Course Outline:**

### **Day One Morning Session:**

#### **Water Management and Assessment Aspects:**

- ❖ Global and Regional water sources allocation
- ❖ Water sources use, hydrology and geohydrology
- ❖ Water allocations principles
- ❖ National Water Act and other regulatory requirements
- ❖ Water use during pandemics
- ❖ Water quality standards in-stream and end of the pipe
- ❖ Physical water quality parameters
- ❖ Chemical water quality parameters
- ❖ Biological water quality parameters
- ❖ Introduction to standard lab analysis: total suspended solids, fecal Coliform, dissolved oxygen, biochemical oxygen demand (BDO5), COD, FI-, Cl-, toxic metals, organic pollutants.



- ❖ Introduction to advanced lab analysis: IC-LC/QTOF, HPLC, GCMS, AAS, TOC, COD Analyzer, UV/Vis Spectrophotometer
- ❖ Introduction to electronic monitoring and telemetry use in Integrated Water Resources Management
- ❖ The importance of field data collection
- ❖ The visualization of water quality monitoring results.

## Day One Afternoon Session:

- ❖ Overview of conventional wastewater treatment processes
- ❖ Microbiology in Wastewater Treatment
- ❖ Energy and resource recovery from the wastewater treatment processes

## Day Two Morning Session:

- ❖ Wastewater Reclamation and Treatment of Impaired Waters – Membrane Systems and Ion Exchange
- ❖ Water Reclamation and Reuse – EPs, EDCs and the Three-Barrier philosophy – uncoupling the Water-Energy nexus
- ❖ Advanced wetland applications
- ❖ Attached Growth Systems
- ❖ Biological Nutrient Removal
- ❖ Activated Sludge – Operational Calculations including F:M –ratio, Solids Retention Time, Oxygen Requirements, COD:TKN –ratio and SVI(Part 1)

## Day Two Afternoon Session:

- ❖ Activated Sludge – Operational Calculations including F:M –ratio, Solids Retention Time, Oxygen Requirements, COD:TKN –ratio and SVI(Continue)
- ❖ Secondary Sedimentation – Up flow Rates & Solids Loading Rates
- ❖ Effluent disposal – impact on aquatic systems
- ❖ Wastewater Reclamation and Treatment of Impaired Waters – Membrane Systems and Ion Exchange
- ❖ Solids treatment and disposal – impact on groundwater systems
- ❖ Monitoring Protocols for Large Water Works

## Delegate Short Note For Day Three:

- 1) On completion 3ECSA CPD/ SACNASP approved certificate.
- 2) Wastewater plant site visit and laboratory in Pretoria.
- 3) A copy of South African ID/Valid passport is required for CPD certificate.
- 4) Transport will be provided by Alliance Training and Conferencing to the site and coming back to the hotel.(In-person delegates)
- 5) Virtual delegates must have stable internet and a device that's compatible for MS Teams.
- 6) Kindly tick on the boxes provided on the registration form to reserve your seat/spot on time and should require early bird booking, please be advised that it will be book and pay.





## Registration Form

Please write in BLOCK CAPITALS

### Company & Delegates Details

Company name: \_\_\_\_\_

Business Address: \_\_\_\_\_

Vat: \_\_\_\_\_

City: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Fax: \_\_\_\_\_

Att: Lethu info@alliancetc.co.za

Joburg Event: 26<sup>th</sup> – 28<sup>th</sup> November 2025

Virtual  In-person

Protea by Marriott Hotel Johannesburg Wanderers

Durban Event: 3<sup>rd</sup> – 5<sup>th</sup> December 2025

Virtual  In-person

Protea Hotel Fire and Ice! Durban Umhlanga Ridge

Transportation to the site @R499.99

Secure Parking @R49.99( Durban Only)

Price per Delegate: R8 999.99(USD490)

Virtual Price: R6 999.99(USD380) Available

Payfast available for all international delegates, but pricing excl bank charges

### Authorization

**Signatory must be authorized to sign on behalf of the contracting Organization:**

First Name: \_\_\_\_\_

Position: \_\_\_\_\_

Email Address: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**THIS BOOKING FORM IS INVALID WITHOUT SIGNATURE**

### Terms and Conditions

1. Full payment to be made on recipient of invoice in 5 working days.
2. Alliance Training & Conferencing reserves the right to refuse entry into the event should full payment not have been received prior to this date.
3. Cancellations, No shows & Substitutions: Cancellations received in writing more than 21 days prior to the event being held carry a 50% cancellation fee. Should cancellations be received between 21 days and the date of the event, the full event fee is payable and non- refundable. (Non-payment or non-attendance does not constitute cancellation).
4. Alterations to advertised package: Alliance Training & Conferencing reserves the right to alter this program without notice or penalty and in such situations no refunds or part – refunds or refunds or alternative offer will be made.
5. Should Alliance Training & Conferencing permanently cancel an event, for any reason whatsoever, the client shall be provided a credit of the equivalent amount paid towards the cancelled event. In the case of a postponed or cancelled event, Alliance Training & Conferencing will not be responsible for covering airfare, accommodation, or other travel cost incurred by clients.
6. Copyright: All intellectual property rights in the materials distributed by Alliance Training & Conferencing in connection with this event are expressly reserved and any unauthorized duplication, publication or distribution is prohibited.
7. Please confirm with your company whether conferencing or workshop fees are paid in full before coming to the event to avoid inconvenience.
8. We reserve the right to cancel delegate registration if delegate conduct is not followed.
9. Warranty of Authority: The signatory warrants that he/she has the authority to sign this application forms and agrees to be personally liable to Alliance Training and Conferencing(Pty)Ltd for payment falling due to pursuant thereto should such warranty be breached.
10. This signed registration form becomes a legal contract with Alliance Training and Conferencing(Pty)Ltd.

## Delegate Details:

1. First Names: \_\_\_\_\_

Position: \_\_\_\_\_

Email: \_\_\_\_\_

2. First Names: \_\_\_\_\_

Position: \_\_\_\_\_

Email: \_\_\_\_\_

3. First Names: \_\_\_\_\_

Position: \_\_\_\_\_

Email: \_\_\_\_\_

4. First Names: \_\_\_\_\_

Position: \_\_\_\_\_

Email: \_\_\_\_\_

5. First Names: \_\_\_\_\_

Position: \_\_\_\_\_

Email: \_\_\_\_\_

**Book 5 and get 6<sup>th</sup> Seat for free**

Halaal meals per delegate per day @650

Account Holder	Alliance Training and Conferencing Pty Ltd
Branch name	KRUGERSDORP, TVL 124
Name of Bank	First National Bank
Branch Code	210-835
Account number	62859878997
Swift Code	FIRNZAJJ