



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

Tel: +27 12 004 8389 · Mobile: +27 65 077 6310

Email: apply@aaticd.co.za · Website: www.aaticd.co.za

COURSE BROCHURE

Sort And Search Techniques In Computer Programming Training

Physical, Mathematical, Computer and Life Sciences / Information Technology and Computer Sciences

Unit Standard 115373 · NQF Level 5 · 6 Credits · 3 Days

COURSE OVERVIEW

This course equips learners with the knowledge and skills to implement sorting and searching algorithms in computer programming. Participants will understand the principles behind common techniques and be able to apply them to solve real-world data processing problems efficiently.

Category	Physical, Mathematical, Computer and Life Sciences
Subfield	Information Technology and Computer Sciences
Unit Standard	115373
Accreditation	SAQA Accredited · NQF Level 5 · 6 Credits
Duration	3 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply fundamental sorting algorithms such as bubble sort, insertion sort, and quicksort to arrange data in a specified order.
- Implement searching algorithms including linear search and binary search to locate data within data structures.
- Analyse the efficiency of different sorting and searching techniques in terms of time and space complexity.
- Evaluate the suitability of various algorithms for given data sets and constraints.
- Demonstrate the ability to debug and optimise code that uses sorting and searching algorithms.
- Design and implement a program that integrates both sorting and searching techniques to solve a given problem.

WHO SHOULD ATTEND

- This course is designed for aspiring and practising programmers, software developers, and IT professionals who need to enhance their ability to organise and retrieve data using efficient algorithms.

COURSE OUTLINE

Day 1: Foundations of Sorting and Searching

- Introduction to sorting and searching: real-world applications
- Linear search: algorithm, implementation, and complexity
- Binary search: prerequisites, algorithm, implementation, and complexity
- Bubble sort: step-by-step execution and coding
- Selection sort: algorithm and implementation
- Introduction to Big O notation: $O(n)$, $O(n^2)$, $O(\log n)$
- Practical exercise: implement linear search and binary search on an array

Day 2: Advanced Sorting Algorithms and Efficiency

- Insertion sort: algorithm, implementation, and use cases
- Merge sort: divide-and-conquer approach, recursion, and implementation
- Quicksort: pivot selection, partitioning, and implementation
- Comparison of sorting algorithms: stability, adaptability, and efficiency
- Recursive vs iterative implementations
- Practical exercise: sort a medium-sized dataset using merge sort and quicksort
- Performance measurement: timing algorithms with different inputs

Day 3: Integration and Practical Application

- Searching in sorted arrays: binary search with duplicates and edge cases
- Hashing as a search technique: introduction to hash tables
- Hybrid sorting: combining insertion sort with merge sort (Timsort)
- Practical mini-project: implement a contact list with search and sort features
- Code optimisation: reducing swaps and comparisons
- Testing and debugging strategies for sorting/searching algorithms
- Final assessment: write and explain a program that sorts and searches a dataset

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **6 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 18,800.00	R 18,800.00
1	In-House	R 24,500.00	R 24,500.00
1	On-Campus (Pretoria)	R 28,100.00	R 28,100.00

UPCOMING SESSIONS

Start	End	Method	Venue
05 Aug 2026	07 Aug 2026	On-Campus	Pretoria, South Africa
05 Aug 2026	07 Aug 2026	On-Campus	Mauritius
10 Aug 2026	12 Aug 2026	On-Campus	Durban, South Africa
10 Aug 2026	12 Aug 2026	On-Campus	Dubai, UAE
11 Aug 2026	13 Aug 2026	On-Campus	Pretoria, South Africa
11 Aug 2026	13 Aug 2026	On-Campus	Mauritius
12 Aug 2026	14 Aug 2026	On-Campus	Abu Dhabi, UAE
12 Aug 2026	14 Aug 2026	On-Campus	Cape Town, South Africa

Contact us if no suitable date is listed – on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 115373) and click **Get A Quote / Apply**. Select your training method and number of delegates – your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za – our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call **+27 12 004 8389** or WhatsApp **+27 65 077 6310** and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically – the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza, 1122 Burnett St, Hatfield 0028, Pretoria, Gauteng, South Africa
Tel: +27 12 004 8389 · WhatsApp: +27 65 077 6310 · apply@aaticd.co.za · www.aaticd.co.za