

Roche Training Program

1. Personal Details	
Course of Study	Computer Science
Special Knowledge and Skills	Project management: GitHub, GitLab, classic and agile process models, application of Scrum in projects Programming languages: Python, Java, JavaScript, TypeScript, SQL Databases: Many types used in DHBW projects (relational database (MySQL, PostgreSQL, Supabase), document-oriented database (MongoDB), object storage (MinIO, AWS S3 bucket), graph database (Neo4J), in-memory database (Redis)) Software quality: Unit tests, automated end-to-end testing (Playwright), DevOps, Docker, pipelines (Kubeflow), TDD Software development: Development of websites (React), mobile applications (React Native), chatbot UIs, Rest APIs Artificial intelligence: AI libraries (TensorFlow, LightFM), vector ranking, neural networks, graph models, NLP, computer vision, predictive analytics, LLMs, agents

2. Practical Phases at Roche	Content taught/Areas of Responsibility
Department Name Global Customer Support	Development of an automated team management board to improve performance & creation of an intranet page: ● Google Sites ● Google Sheets ● Google Slides ● Apps Script (JavaScript)
Supervisor Sara Rusnak	
Time Period 26.12.22 – 16.04.23	
Location Mannheim	
Department Name	Expansion of a modular workflow platform for automating the sales process in the point-of-care sector:

Diabetes Care Sales Force	● Outsystems ● MySQL
Supervisor Christian Keller	
Time Period 10.07.23 – 01.10.23	
Location Mannheim	
Department Name pRED Data & Analytics	Design and implementation of an intelligent chatbot that automatically generates high-quality code for REST APIs using state-of-the-art AI technologies, thereby accelerating development processes: ● AI agents (Autogen Framework) ● LLMs ● REST APIs (with Swagger) ● GitLab ● Python
Supervisor Dr. Torsten Schindler & Dr. Raul Rodriguez-Esteban	
Time Period 25.12.23 – 31.03.24	
Location Basel	
Department Name GLIDE Data Science and Artificial Intelligence	Improvement of a recommendation system that uses machine learning models to enable personalized email campaigns in order to increase customer satisfaction, reach, and sales: ● AI libraries (TensorFlow, LightFM) ● Recommender system model ● Hyperparameter optimization ● GitLab ● Python ● Pipelines (Kubeflow) ● Scrum ● DevOps
Supervisor Eduardo Vioque-Martínez	
Time Period 24.06.24 – 29.09.24	
Location Basel	
Department Name Data & Analytics Chapter - Data Advisory and Insights 7	Optimization of an AI tool to support sales managers in their decision-making, with the aim of increasing sales and maximizing employee efficiency: ● GitLab ● Python ● Figma ● UX ● ChatGPT-API ● Snowflake ● Scrum
Supervisor Markus Dietz	
Time Period	

31.03.25 – 30.09.25	
Location Mannheim	

3. Training in the Training Department	Content taught
Project Weeks	
„Einführungswoche“	Legal information about Roche, teamwork
„Fit fürs Team“	Communication, teamwork
„Wir im Prozess“	/ (Due to deployment in Switzerland, participation was not possible)
Professional Training	
Basic Training	General regulations at Roche
English	B2/C1
In-company training/ Personalized training modules	• Skills for the digital workplace • Empathy • Apps Script • Body language and voice • Scientific work

4. DHBW (University)	Content taught
Theory Phase 1	• Programming: Java • Web Engineering • Theoretical Computer Science: Fundamentals and Logic • Digital Technology • Analysis
Theory Phase 2	• Programming languages: Python • Group project: Website development • Theoretical computer science: Algorithms and complexity • Technical computer science: Digital technology • Linear algebra • Business administration
Theory Phase 3	• Software Engineering • Communication and Network Technology • Operating Systems • Computer Architecture

	• System-Oriented Programming • Advanced Algorithms • Applied Mathematics • Statistics
Theory Phase 4	• Software Engineering • Databases: SQL • Theoretical Computer Science: Compiler Construction, Automata, Formal Languages • IT System Security • Fundamentals of Digital Transformation: Big Data, Internet of Things
Theory Phase 5	• Software Engineering • Term paper: App development for real-world use cases • Databases • Mobile application development • Process models: Agile process models, classic models
Theory Phase 6	• Term paper: App development for real-world use cases • New concepts: AI tool comparison for programmers • Software quality of applications (testing) • Artificial intelligence