REPLY

Politecnico di Torino
Specializing Master's Programmes and Lifelong Learning

master school

AI & CLOUD: HANDS-ON INNOVATION

2ND LEVEL SPECIALIZING MASTER'S

TODAY'S CHALLENGES NEED A NEW GENERATION OF TALENTED SPECIALISTS

The opportunities brought by AI and the corporate trend to move business models and core services to the cloud are shaping where, and how, companies do business.

This requires people with the highest and most sophisticated level of **training and expertise.**

REPLY

Reply specialises in the design and implementation of solutions based on new communication channels and digital media.

Through its network of specialist companies, Reply supports some of Europe's leading industrial groups in Telco & Media, Industry & Services, Banks & Insurance, and Public Administration to define and develop business models, suited to the new paradigms of Big Data, Cloud Computing, Digital Media and the Internet of Things. Reply services include: Consulting, System Integration and Digital Services.

POLITECNICO DI TORINO MASTER SCHOOL

For more than 160 years, the Politecnico di Torino has been one of the most prestigious public institutions for education, research, technological transfer and services in all sectors of architecture and engineering.

The Specializing Master’s programme and Lifelong Learning School stands as a center of excellence aiming to define ground breaking educational paths in response to the business context needs.

The School aims to offer a technical and managerial training that will specialize the knowledge base gained with a traditional degree, providing students with the tools to adapt successfully to the constantly changing job market requirements and increasing their entrepreneurial attitude.

AI & CLOUD: HANDS-ON INNOVATION

This specializing Master's programme, developed by Reply and the Politecnico di Torino, offers an **elite group of talented post-graduates** a Master's qualification in some of IT's most advanced specialisations.

This Master's programme, the first of its kind, is scheduled to start in **January 2022**, and will accept up to 40 students. Taught in English, successful students will divide their time between the Politecnico di Torino and **Reply's offices**.

WHO IS THE SPECIALIZING MASTER'S PROGRAMME FOR?

The **12-month programme** is for students with a Master's degree (awarded by 31 December, 2021) in one of the following:
Computer Engineering, Computer Science, Cyber security, Automation Engineering, Telecommunications Engineering or Electronic Engineering.

Selected candidates will receive a job offer from Reply, valid from the beginning of the programme. If students stay in their job for at least three years, Reply will cover the cost of taking part in the programme (€ 18.000).

In other words, Reply pays you to study, so you get to
#EarnWhileYouLearn

KEY INFO

DURATION

1 YEAR

From Jan. to Dec. 2022

PLACES

40

The Master is limited to 40 students.

LANGUAGE

ENGLISH

Level B2 required

COST

NO COST

On accepting a permanent employment contract, Reply pays the programme's fee (€18,000).

CAREER

PERMANENT JOB

Chosen students receive a permanent job offer with a Reply Group company.

LOCATION

TURIN

Lessons take place on the Politecnico di Torino campus.

Project work takes place in one or more Reply offices.

1st EDITION STUDENTS' FEEDBACK

"I liked the opportunity to study subject and advanced technologies that usually university doesn't deal with, or doesn't treats in such a practical way"
Francesco, now working in Storm Reply, Turin

"I've been surprised by how well all the students were followed in all the steps during the Master caring a lot about things were going."
Sabrina, now working in Power Reply, Milan

"We created a strong and cohesive group, this is most of all because we had a lot of knowledge sharing among us and also because of the team activities that were part of the courses attended."
Antonio, now working in Cluster Reply, Turin

"I'm appreciating the opportunity to have hands-on practices with the support of top players in machine learning and cloud technologies.."
Andrea, now working in Logistics Reply, Milan

THE PROGRAM TIMELINE

BASE COURSES: topics will cover advanced database concepts, the theory and models related to AI and ML, the infrastructures to support Cloud architectures advanced programming concepts and other applicable subject matters.

CORE COURSES: Cloud, AI / Machine Learning and Data. Every topic will be articulated through the study of basic concepts and the actual experimentation of how these concepts have been adopted and integrated by "big vendors" on their platforms.

ADDITIONAL COURSES: Security Lab – Attack/Defence to concretely experiment an attack/defence scenarios and **IoT – Hands-on** to get the first introduction to the IoT world with a concrete hands-on approach.

In conjunction with the Core Courses and the Additional Courses, the student will begin to gain **WORK EXPERIENCE** within work teams made up of experts in the field. An integral part of the work activity will be the assignment of a project work on which the student will write his/her **THESIS**.

SPECIALIZING IN MODERN TECHNOLOGIES

The Master illustrates how to use modern digital technologies in practice: from effective data management to the adoption of Artificial Intelligence and Machine Learning techniques, all through the latest Cloud-based implementation models.

The Master's covers **THREE MAIN AREAS** of specialization:

1. **CLOUD**
2. **AI/MACHINE LEARNING**
3. **DATA**

CLOUD

This area of specialization allows learning the technologies related to the world of Cloud both in IaaS and PaaS shape. It will deal with the proper design of architectures and their correct deployment and management.

The course will deal initially to get the right knowledge on the main cloud provider and with the concepts of microservices architecture, containerization and hybrid clouds delivery architectures. Solutions such as **Docker**, **Kubernetes** but also **serverless** technologies will be considered.

The course will provide the necessary skills to effectively design a **complex microservices** architecture, to manage it effectively through **Continuous Integration** methodologies on containerized or native architectures. Special focus will be put also on enabling technologies such as network elements and storage and databases services.

The course will be practical and will be developed through a predominance of laboratory hours through which the student will have the opportunity to touch the concepts described above, as well as being able to see how they are implemented by major cloud providers in the market

AI/MACHINE LEARNING

This training area focuses on the business application of major artificial intelligence and machine learning techniques such as **computer vision**, **natural language processing**, **predictive systems**, and **deep learning**.

The training course is articulated around an in-depth study of the cognitive systems offered by the **main vendors in the sector** (AWS, Google, Microsoft, Oracle) and their application in multiple contexts of use such as Image Recognition, Digital Assistants, Predictive Maintenance, Intelligent Process Automation, Recommendation systems and Smart Analytics.

The specialization is based on case studies of **real-life experiences**: leveraging Reply's daily experience on frontier technologies, participants can study real applications of the platforms and frameworks offered by the main suppliers in the sector.

The implementation of cutting-edge algorithms and models, Deep Learning techniques and an in-depth study of Automated Machine Learning tools will go hand in hand with an approach aimed at **capitalizing on the results** achieved with the definition of evaluation metrics for the effectiveness of the solutions developed from an enterprise perspective.

Technology will represent the predominant part of the path; however, a space will also be dedicated to important issues such as bias, fairness and explainability of the model, essential to bring AI to today's large companies.

DATA

In this area of specialization, students will have the opportunity to deepen the technologies and methodologies that enable **the adoption of a "data-driven" approach**.

An initial theoretical part will provide knowledge of the main aspects like technologies (Hadoop, MapReduce, Hive, Spark, etc.), architectures (Lambda Architecture, Kappa Architecture, event-driven, CQRS, data mesh) and relational data modelling solutions (Snowflake schema, Star schema, Data Vault, etc).

The course will then move to a **hands-on approach** with a set of exercises in which the participants will implement end-to-end data pipelines that starting from source systems implements all the transformation phases.

As a result, participants will have the possibility to understand how to ingest batch and real-time data, how to transform and organize data for further analysis, how to industrialize machine learning models and finally how to expose the value extracted from data.

Most of the hours will be dedicated to the hands-on part and each exercise will be done on a different cloud provider in order to discover the data components made available by the vendors.

5 REASONS TO JOIN

1. A **FULL-TIME JOB** IN REPLY
2. SPECIALISED **KNOWLEDGE**
3. HANDS-ON **EXPERIENCE**
4. MAIN VENDOR **OFFERING**
5. REPLY **METHODOLOGY** AND POLITECNICO DI TORINO **HIGHLY QUALIFIED ACADEMIC STAFF**

BECOME ONE OF THE FUTURE INDUSTRY'S LEADING PLAYERS

Applications are open from
13th September to ~~22nd~~ 29th October, 2021.

To find out more and apply, visit **master.reply.com**