
ON-SITE TRAINING
Get ROS2 Industrial Ready
September 20th - 24th, 2021 // Barcelona, Spain
ROS2 Basics + ROS2 Nav2 + Manipulation with MoveIt2
HIGHLIGHTS
The Construct
in corporation with
Robotnik

Get ROS2 Industrial Ready

- Practice with Simulators & **Real Robots**
- **40 Hours** of Instructor-Led Hands-On Training
- **Life-time Access** to the Course Materials
- Visit Barcelona-based **Robotics Companies**
- **Lunch** and Snacks Provided
- **Certificate**

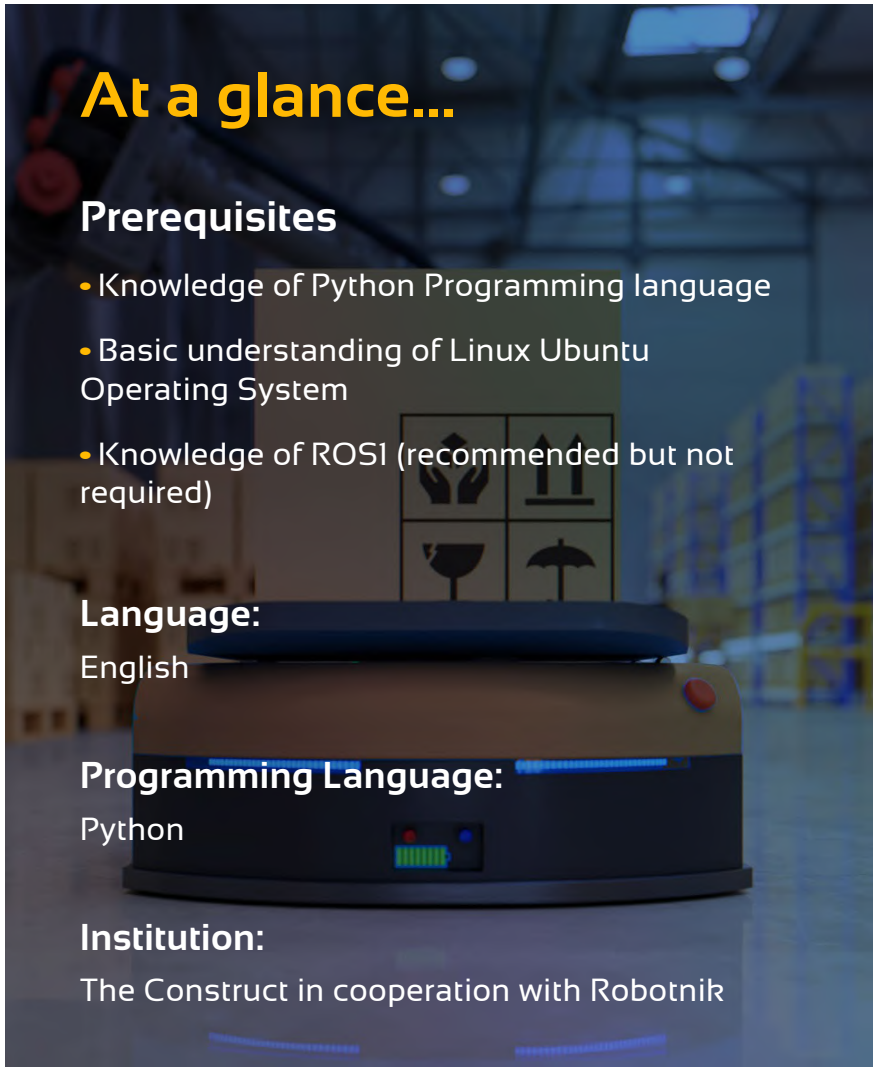
About this workshop

Understanding how ROS2 works is becoming a MUST.

ROS2 is expected to fully replace ROS1 by 2023. The Galactic distribution released in May 2021 shows ROS2 is very mature and ready for real-world applications.

In this five-day ROS2 training, learn **how to program robots with ROS 2 Galactic**, including navigation and grasping.

Participants will practice with robot simulations and then with real robots to test their programs live.



What you'll learn

- Creation of ROS2 packages
- Management of the new Colcon universal building system
- Topic publishers and subscribers in ROS2 Python
- Nodes management: life cycle, executors and callback groups
- Services and actions
- Hybrid application with ROS1 and ROS2
- Use of debugging tools in ROS2
- ROS2 Mapping
- ROS2 Localization
- ROS2 Path Planning
- ROS2 + DDS
- Create and configure a MoveIt2 package for a robotic arm
- Perform ROS2 Motion Planning & Grasping

How is this workshop for?

- ROS developers that want to transition to ROS2
- Researchers focusing their research on ROS2
- Engineers or CTOs who want to build scalable robotics products, faster.

Real Robots used

You will be using the following real robots throughout the training:

RB-1 Base / Robotnik

Autonomous and collaborative mobile platform

The RB-1 BASE mobile robot is a robot platform designed for indoor applications. The mobile robot can carry different loads or materials and can integrate other components or platforms such as a robotic arm or a torso.

The software includes a control system, a tracking system laser-based, a navigation system and a user interface HMI (basic).

UR3e / Universal Robots

A flexible collaborative robot arm

The UR3e collaborative robot is a smaller collaborative table-top robot, perfect for light assembly tasks and automated workbench scenarios.

The compact table-top cobot weighs only 24.3 lbs (11 kg), but has a payload of 6.6 lbs (3 kg), ±360-degree rotation on all wrist joints, and infinite rotation on the end joint.

Hook 100TM / MiR

An efficient extended-playload mobile robot

The MiR Hook 100 TM supports the transport of loads up to 300 kg (661 lbs), providing exciting new internal logistics options for weighty or unwieldy cargos.

Training Details

Day 1

ROS Fundamentals

Topic 1 - Understanding Basic ROS2 Concepts

- Structure and launch ROS2 programs (packages & launch files)
- Create basic ROS2 programs (Python-based)
- Understand basic ROS2 concepts: Nodes, Client Libraries, etc.

Topic 2 - ROS2 Topics

- Topic Subscribers
- Topic Publishers
- Interfaces
- Management of nodes

Topic 3 - ROS2 Debugging Tools

- Use logs in ROS2
- RViz2 debugging tool
- ROS2 doctor

Day 2

ROS2 Advanced Topics

- ROS2 DDS
- ROS2 Services
- ROS2 Actions
- ROS1_Bridge

Day 3

ROS2 Nav2

- ROS2 Mapping
- ROS2 Localization
- ROS2 Path Planning and Obstacle Avoidance

Day 4

ROS2 Nav2 Advanced Features & Manipulation

Topic 1 - ROS2 Nav2 Galactic Functionality

- Waypoint Task Executors
- Speed Limited Zones
- Keep out zones

Topic 2 - Arm Navigation with MoveIt2

- Configure a Moveit2 package for a robotic arm
- Programatically perform motion planning

Day 5

Grasping

- Use perception to detect object location
- Grasp object

5 days

40h total length

Agenda

	Monday Sept 20th	Tuesday Sept 21st	Wednesday Sept 22nd	Thursday Sept 23rd	Friday Sept 24th
9:00 – 11:00 a.m.	ROS2 Basics Session 1	ROS2 Basics Session 3	ROS2 NAV2 Session 1	ROS2 Nav2 Session 3	ROS2 Manipulation 2
11:00 – 11:30 a.m.	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11:30 a.m. – 1:30 p.m.	ROS2 Basics Session 2	ROS2 Basics Session 4	ROS2 Nav2 Session 2	ROS2 Manipulation 1	ROS2 Manipulation 3
1:30 – 2:30 p.m.	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break
2:30 – 6:30 p.m.	Real Robot Project	Real Robot Project	Real Robot Project	Real Robot Project	Real Robot Project
7:00 – 8:00 p.m.	Visit Robotics Company	Visit Robotics Company	Visit Robotics Company	Visit Robotics Company	Go have a drink

Instructors

Alberto

Head of Education at The Construct | Creator of over 30 ROS courses | Author of ROS IN 5 DAYS book collection

Ricardo

CEO of The Construct | Teacher of Robotics at La Salle University and Universitat Politècnica de Catalunya

Miguel Angel

Head of Research at The Construct | Creator of over 10 ROS AI courses | Author of ROS IN 5 DAYS book collection

Rodrigo

Robotics Engineer at The Construct | Leader of RoBox - 24/7 Remote Real Robot Lab

Testimonial

<< Thanks for the outstanding workshop. The course was really interesting, valuable and helpful. >>

Xue Er (Shamaine) Chung
AR/MR Robotic Research Engineer

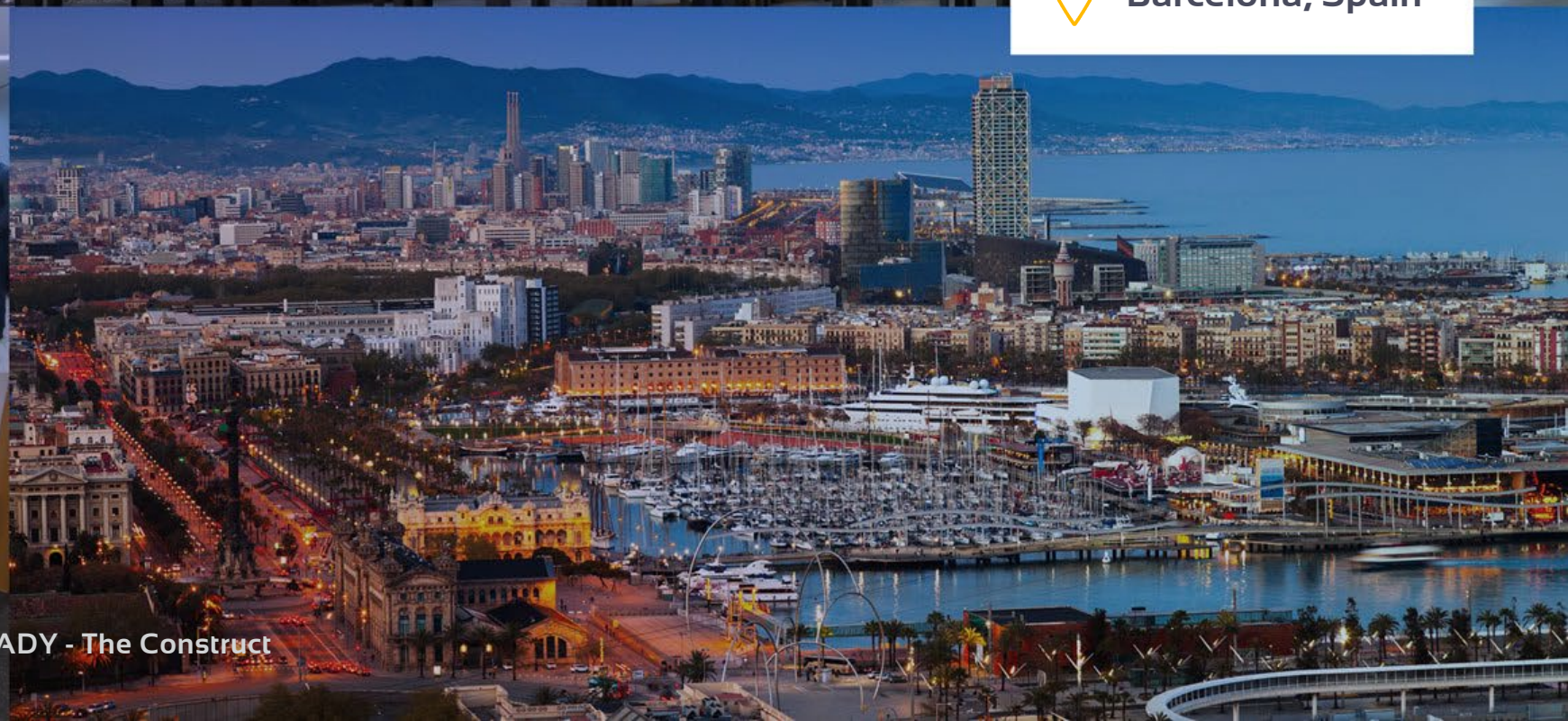
Prices

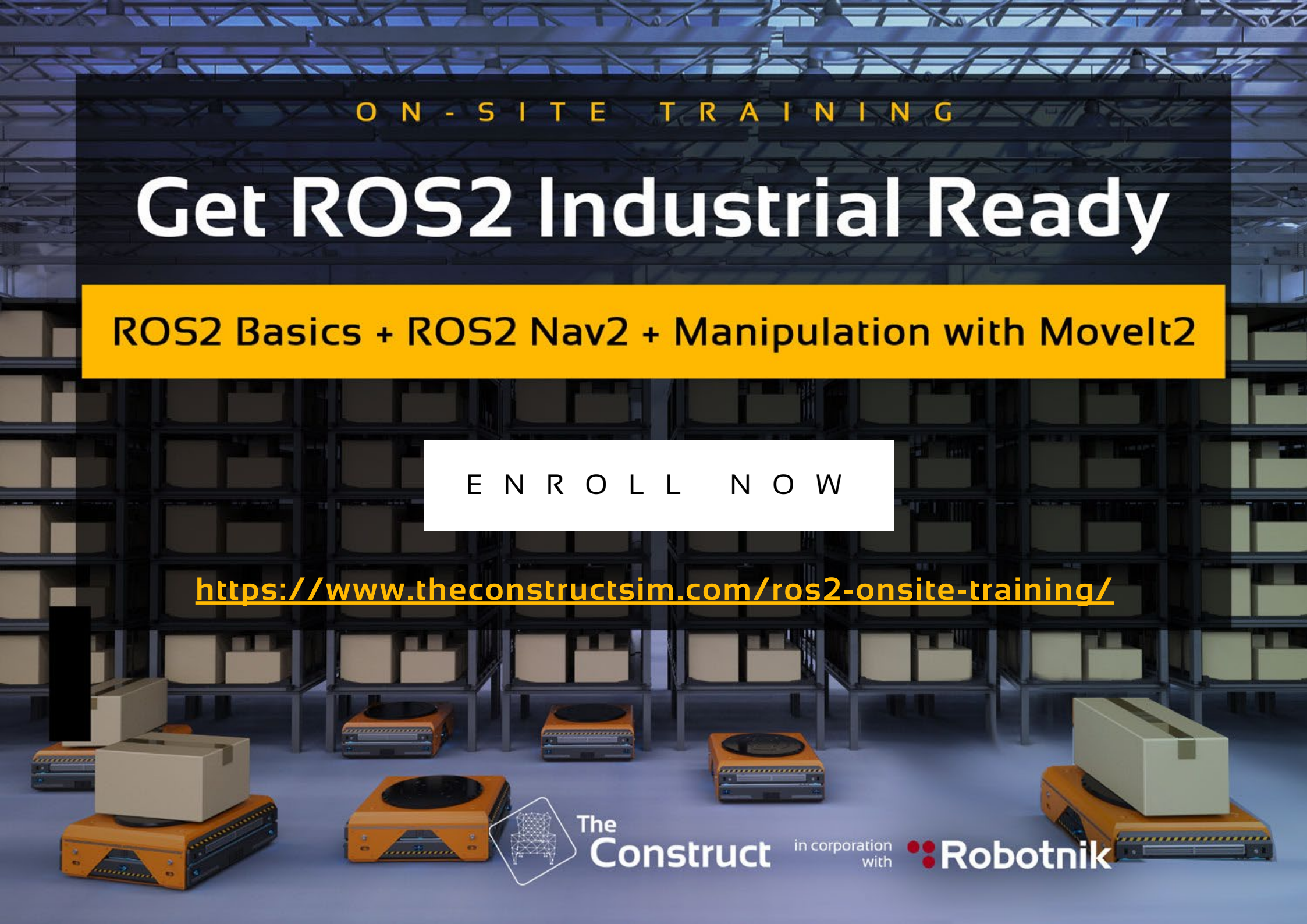
~~**Early Registration Fee**~~ (On or before August 10, 2021)	~~€ 1800 EUR~~
Regular Registration Fee (On or before August 30, 2021)	€ 2300 EUR
Late Registration Fee (September 1, 2021 and onwards)	€ 3000 EUR

20 spots available!

which are served on a FIFS basis

Barcelona, Spain

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