

# Simulation and offline programming of industrial robot cells, Tampere University

The training package is carried out as an independent online study.

Simulation and model-based offline programming are digital tools for modelling, verification and programming of the functionality of industrial robots in virtual environments. Together, they enable the design and programming of automated robotic systems without real physical systems, as well as verifying the functionality of the designed systems before commissioning.

This module explores the basics of simulation and model-based offline programming from the perspective of industrial robotics and explores the possibilities presented by digital twins and virtual reality in industrial robotics. After completing this training module, the student will understand the terminology related to simulation of robotic systems and digital twins. Understand the benefits and opportunities of virtual technologies in the design and programming of industrial robotic systems.

The material of the Simulation and offline programming of industrial robot cells -training module includes the following sections of [the Industrial Robotics book](#) and the related video lecture. The module can also be completed on the basis of written material in The Industrial Robot Book, which you can buy or get from e-library.

If you wish, you can test your skills using an online test. The questions in the test are based on the following chapters in The Industrial Robot Book:

- 2.15 Simulation and offline programming
- 12. Simulation and offline programming

The section also includes a "[Robottisolujen simulointi ja etäohjelmointi](#)" video from the additional material in the Industrial Robotics book. Video is in Finnish but has English subtitles in YouTube.

## Completing this study module

- Watch the lecture video, application video and read the written material
- If you wish, you can test your skills with an online exam. To take the exam, do the following:
  - Log in to the Digicampus platform <https://digicampus.fi/>
  - Send an e-mail to [jyrki.latokartano@tuni.fi](mailto:jyrki.latokartano@tuni.fi) stating that you want to take the exam at Digicampus. Also state what name and e-mail address you are logged in to Digicampus.
  - You will receive e-mail instructions on how to take the multiple choice exam

## Links

The Industrial Robot book website: <https://industrialrobotbook.com/>

Lecture video: <https://www.youtube.com/watch?v=NXocNmOnPE0>

Book application video: <https://www.youtube.com/watch?v=sbodvtLYRpg> (turn on EN subtitles)