Experimental Techniques in Mechatronics







Contents

- Mechatronics Training Curriculum
- Details of Course Experimental Techniques in Mechatronics







Mechatronics Training Curriculum





<u>Relevant partner trainings:</u> Applied Optics, Electronics for nonelectrical engineers, System Architecture, Soft skills for technology professionals,

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www.mechatronics-academy.nl





Mechatronics Academy

- In the past, many trainings were developed within Philips to train own staff, but the training center CTT stopped.
- Mechatronics Academy B.V. has been setup to provide continuity of the existing trainings and develop new trainings in the field of precision mechatronics. It is founded and run by:
 - Prof. Maarten Steinbuch
 - Prof. Jan van Eijk
 - Dr. Adrian Rankers
- We cooperate in the **High Tech Institute** consortium that provides sales, marketing and back office functions.





Experimental Techniques in Mechatronics





Course Directors / Trainers

Course Director(s) / Trainers

- Dr.ir. Pieter Nuij (MaDyCon)
- Prof.Dr.ir. Bert Rozen (Novic)
- Dr.ir. Adrian M. Rankers (Mechatronics Academy)





Global Program

Day	Duration	Topics	Trainers
1	9.00-12.30	Introduction, Dynamics/modal analysis theory	Adrian Rankers
		Discrete time signals (incl. intro Siglab)	Bert Roozen + Pieter Nuij
		Frequency analysis	<u>Pieter Nuij</u> + Bert Roozen
	13.30-16.30	Frequency analysis	<u>Pieter Nuij</u> + Bert Roozen
		System analysis	Bert Roozen + Pieter Nuij
2	9.00-12.30	Excitation Techniques - Theory / Demonstration / Exercises - Discussion/demonstration of error sources	<u>Pieter Nuij</u> + Bert Roozen
	13.30-16.30	Sensors & Calibration - Theory / Demonstration / Exercises - Discussion/demonstration of error sources	<u>Pieter Nuij</u> + Bert Roozen
3	9.00-12.30	Modal Parameter Estimation - Curve Fitting (general) - Theory of Quadrature Peak Pick and Polynomial Exercise ("manual") Quadrature Peak Pick	<u>Bert Roozen</u> + Pieter Nuij + Adrian Rankers
	13.30-16.30	Exercise ("manual") Quadrature Peak Pick – continued	
		Measurement Validation Approaches / Paperwork	Adrian Rankers + Bert Roozen + Pieter Nuij
		Quiz / Lessons-Learned	Adrian Rankers + Bert Roozen + Pieter Nuij
		Wrap-Up	Adrian Rankers + Bert Roozen + Pieter Nuij





Day 1 (morning)

- Introduction, Dynamics/modal analysis theory
- Discrete time signals (incl. intro Siglab)
 - Discrete vs. continuous time, Sampling, Nyquist
 - Aliasing, Anti aliasing filters
 - ADC, dynamic range, signal to noise ratio
- Frequency analysis

Parameter Relations









Day 1 (afternoon)

- Frequency analysis (continued)
- System analysis

academv

brainport





Day 2 (morning)

Excitation Techniques







Day 2 (afternoon)

Sensors & Calibration







Day 3 (morning)

- Modal Parameter Estimation
 - Curve Fitting (general)
 - Quadrature Peak Pick and Polynomial
- Exercise Quadrature Peak Pick









Day 3 (afternoon)

- Exercise Quadrature Peak Pick (continued)
- Measurement Validation Approaches
- Test Report
- Special Topics













Via the website of our partner High Tech Institute



