Course Portfolio

Disciplines

1. Analog and Digital Electronics
2. IC Design and Technology
3. EMC, ESD, Signal Integrity, Power Integrity
4. Thermal Design
5. Low Power
6. Digital Signal Processing
7. Artificial Intelligence
8. Optics
9. Personal skills

Course contents

Course enrolment

Technical Training for Professionals (T2Prof)
www.t2prof.nl
info@t2prof.nl
+31 (0)6 13 988 709

High Tech Institute (HTI)
www.hightechinstitute.nl
training@hightechinstitute.nl
+31 (0)85 401 3600

1. Analog and Digital Electronics

1. Design of Analog Electronics (for PCB design or design on transistor / IC level, 3 modules)
    1. Automation of analog circuit engineering using MATLAB (SLICAP-MATLAB)
    2. Embedded analog electronics 1 (DAE-AE1)
    3. Embedded analog electronics 2 (DAE-AE2)
    4. Analog IC Design (DAE-IC)
2. Analog and Digital System and Circuit Design
    1. Electronics for Non-Electronic engineers - Basics Electricity and Analog Electronics (ENE-BEAE)
    2. Electronics for Non-Electronic engineers - Basics Digital Electronics (ENE-BDE)
3. Power electronics
    1. Switch Mode Power Supplies – Full (SMPS-Full)

2. IC Design and Technology

1. Nanometer CMOS ICs – Basics (CMOS-BASIC)
2. Bits on Chips – an Introduction (BOC)
3. IC - Physics Devices and Processing (IC-PDP)
4. Micro Electro Mechanical Systems (MEMS)
5. Test and design-for-test for digital integrated circuits (TEST-DFT)

3. EMC, ESD, Signal Integrity, Power Integrity

1. Electro Magnetic Compatibility - Design Techniques (EMC-DT)
2. EMC course for Mechatronic Engineers (EMC-ME)
3. Signal Integrity Workshop (SI-WS)
4. Power Integrity for Product Designers (PI-PD)

4. Thermal Design

1. Thermal Design and Cooling of Electronics Workshop (COE)

5. Low Power

1. Ultra Low Power for Internet of Things (ULP)

6. Digital Signal Processing

1. Digital Signal Processing (DSP)

7. Artificial Intelligence

1. Practical Machine Learning (PML) **(new)**

8. Optics

1. Applied Optics (AP-OPT) **(changed)**
2. Modern Optics for Optical Designers – Part 1 (CMOP-Part 1) **(changed)**
3. Modern Optics for Optical Designers – Part 2 (CMOP-Part 2) **(changed)**

9. Personal skills

1. Creative Techniques to Optimal Problem Analysis, Decision Taking and Cooperation-short (6HATS-Short)
2. Creative Thinking-full (LATH-Full)
3. Creative Thinking-short (LATH-Short)

Course teasers

1. 6HATS-Short Creative Techniques to Optimal Problem Analysis, Decision Taking and Cooperation-short – For everyone who would like to work together with others on complex problems and to analyze and solve these problems. 1 day.
2. AP-OPT Applied Optics - Practice-oriented course for people who are working in projects together with optical designers and who want to know more about optical principles and applications. 15 weekly afternoon sessions. Lectures, hands-on sessions, tour, homework.
3. BoC Bits on Chips – an Introduction – A one-day introduction into the basics of (CMOS) Integrated Circuits (Chips), their complexity, operation, possibilities and limitations. For people with little or no knowledge of Chips, active in the semiconductor industry in disciplines like management, marketing - sales and software development, who want to improve the communication with their technical colleagues. 1 day.
4. CMOP- Part1 - Modern Optics for Optical Designers – Part 1 - Comprehensive training in Optical Design. Optical Basics and Applications: Diffraction and Micro-Optics, Waveguiding and Lasers, Lithography, Non-linear optics, Biomedical Photonics. 15 mornings in 24 wks. Individual assignments, group assignments.
5. CMOP- Part2 - Modern Optics for Optical Designers – Part 2 - Comprehensive training in Optical Design. Optical System Design. Optical Detection. Illumination for Optical Inspection. Non-imaging Optics. Measuring and Testing. 15 mornings in 24 wks. Individual assignments, group assignments. Tour.
6. CMOS-BASIC Nanometer CMOS ICs - Basics – A 3.5-day tutorial on the development of CMOS ICs. For engineers working in electronic product development and engineering, who have to write and read IC specifications, test samples, discuss technical details with suppliers and customers, etc. and for others who need a thorough understanding of ICs.
7. CoE Thermal Design and Cooling of Electronics Workshop - Introductory course on thermal design and cooling of electronic components, modules and systems, both for experienced and non-experienced electronic and mechanical engineers. 3 days, case study in two groups.
8. DAE-AE-1, Design of Analog Electronics – module Embedded Analog Electronics 1 – One module of a curriculum on the design of analog electronics. The curriculum stands out from the main stream by the methodical and design-oriented approach, which targets an industrial environment. The advantages of this approach are: Predictable results, Controllable design route and First-time right. This module learns to specify and design the most essential basic functions (amplifiers and analog level shifts) for interfacing with sensors, actuators, AD and DA converters. It also refreshes, broadens and learns to apply analysis techniques. 9 days, lectures, practical training, home-work and final assignment.
9. DAE-AE2, Design of Analog Electronics – module Embedded Analog Electronics 2 - One module of a curriculum on the design of analog electronics. The curriculum stands out from the main stream by the methodical and design-oriented approach, which targets an industrial environment. The advantages of this approach are: Predictable results, Controllable design route and First-time right. This module learns to apply, specify and design analog functions that are often required in embedded systems. The functions discussed in this module are: power switches, digital level shifts, active and passive filters, networks for impedance matching and –correction, single-bit AD converters, and AD and DA converters (selection and application only). 5 days, lectures, practical training, home-work, assignment.
10. DAE-IC, Design of Analog Electronics – module Analog IC Design - One module of a curriculum on the design of analog electronics. The curriculum stands out from the main stream by the methodical and design-oriented approach, which targets an industrial environment. The advantages of this approach are: Predictable results, Controllable design route and First-time right. This module learns to specify and design an analog integrated circuit comprising an application-specific amplifier and/or DC reference; 11 days, lectures, practical training, home-work, assignment.
11. DSP Digital Signal Processing - Comprehensive course on Digital Signal Processing. Mathematical basics. Digital filter theory. Practical realization. Application examples. 17 weekly evening sessions. Homework, exam.
12. EMC-DT ElectroMagnetic Compatibility - Design Techniques - Introductory course on electromagnetic emission and susceptibility in products and systems: problems, analysis methods, measures. 4.5 days.

13. EMC-ME EMC course for mechatronic engineers - Introductory course for mechatronic and mechanical engineers on electromagnetic emission and susceptibility. The ME engineer needs to know what kind of EMC problems can occur. He should be able to communicate with the electronic engineer to understand the EMC requirements and how he can take care that the mechanical design obeys the EMC requirements. 1 day.
14. ENE-BDE Electronics for Non-Electronic engineers - Basics Digital Electronics - A comprehensive course for non-electronic engineers to gain insight, practical knowledge and skills in digital electronics, essential to work in projects together with electronic engineers. 13 Evening lessons of 3 or 4 (in case of hands-on) hours Excluding one test.
15. ENE-BEAE Electronics for Non-Electronic engineers - Basics Electricity and Analog Electronics - A comprehensive course for non-electronic engineers to gain insight, practical knowledge and skills in electricity and analogue electronics, essential to work in projects together with electronic engineers. 22 Evening lessons of 3 or 4 (in case of hands-on) hours. Excluding three tests.
16. IC-PDP IC-Physics Devices and Processing - Comprehensive course to learn the basics of semiconductor physics, devices and processing. Process flow, semiconductor devices and device physics, MOS and bipolar IC processing, process control monitoring. 12 weekly sessions of 1 evening, incl. homework.
17. LATH-full Creative Thinking-full – Practical training for everyone who would like to improve their creativity to generate practical and valuable ideas. 2 days.
18. LATH-short Creative Thinking - short - Practical training for everyone who would like to improve their creativity to generate practical and valuable ideas. The 1 day course will focus more on theory and less on applying it. 1 day.
19. MEMS Micro Electro Mechanical Systems - Introductory course on theory, design and application of Micro ElectroMechanical Systems. 3 days.
20. PI-PD Power Integrity for Product Designers - Electronic systems show increasing speed, power dissipation and density. The design, manufacture and simulation of a Power Distribution Network (PDN) for such systems become an increasing design challenge. The allowed noise on signals and power supply rails decreases and the density and bandwidth of interconnections increases. This means that the design of a power distribution network is not independent anymore from the Signal Integrity and Electro Magnetic Compatibility (EMC) design domains. Power distribution design therefore becomes an important condition for good signal integrity and electromagnetic compatibility. 2 days.
21. PML Practical Machine Learning – The course is a set of lectures each followed by practical exercises with Machine Learning Software and Matlab. Emphasis is put on the "how-to-do-it" approach. The hands-on sessions are on real-world industrial case studies. The participants are encouraged to bring their own data to get help and advice on how to deal with it. The course is structured to be useful also without the perClass software. 5 days.
22. SI-WS Signal Integrity Workshop - As systems get faster, signal integrity may become a problem. In this workshop, for electronic designers and board lay-outers, the theory behind signal integrity is explained, practical problems are modeled and simulated, solutions are discussed. 2.5 days.
23. SLICAP-MATLAB Automation of analog circuit engineering using MATLAB - A new one-day seminar about the new symbolic circuit simulator SLiCAP-MATLAB: Setting up and solving design equations for analog circuits. 1 day.
24. SMPS-Full Switch Mode Power Supplies-Full - The Full course discusses the design of switch mode power supplies, general topologies, components of power circuits, switching devices and (integrated) control circuits. The topologies discussed are used for applications up to approximately 300 W. 6 days.
25. TEST-DFT Test and design-for-test for digital integrated circuits. This course, presented by a world-renowned speaker in the field with broad scientific and industrial experience, covers the fundamentals of digital IC test and Design for Testability.
26. ULP Ultra Low Power for Internet of Things - This workshop discusses various blocks from the perspective of their possibilities to consume less power: energy sources, regulators, memory/processor/I-O, sensors & interfacing, radio. It identifies factors that influence energy consumption, shows how to model and measure energy consumption, provides an overview of available energy measurement tooling, provides an overview how to reduce the energy footprint and provides hands-on sessions to anchor the obtained knowledge.2 days.