

# Electronics

## EE3C11

(Introduction)



Rene van Swaaij



Chris Verhoeven



Anton Montagne



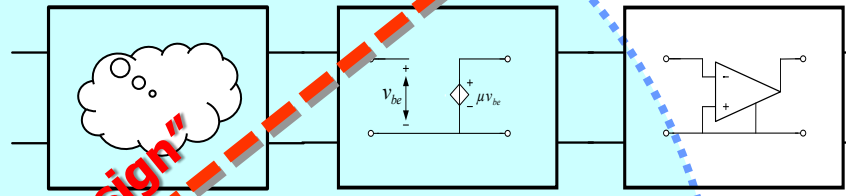
Alana Datema-Heijbers

# Building the "bridge"

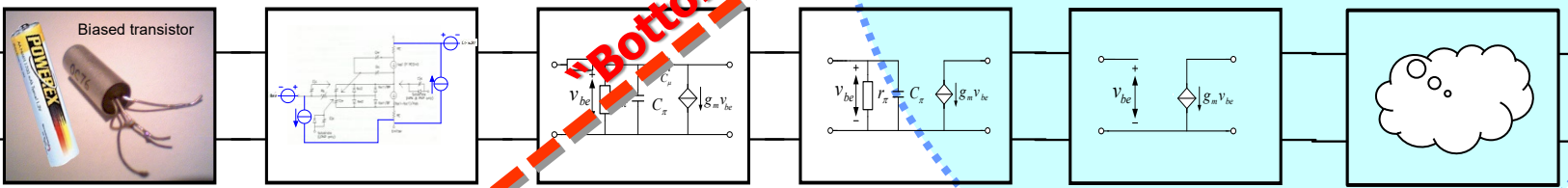
**Specifications** come from the top  
Hardware comes from the bottom  
**Show-stoppers** come from the bottom

**Customer**

Top-down design



Design Methodology

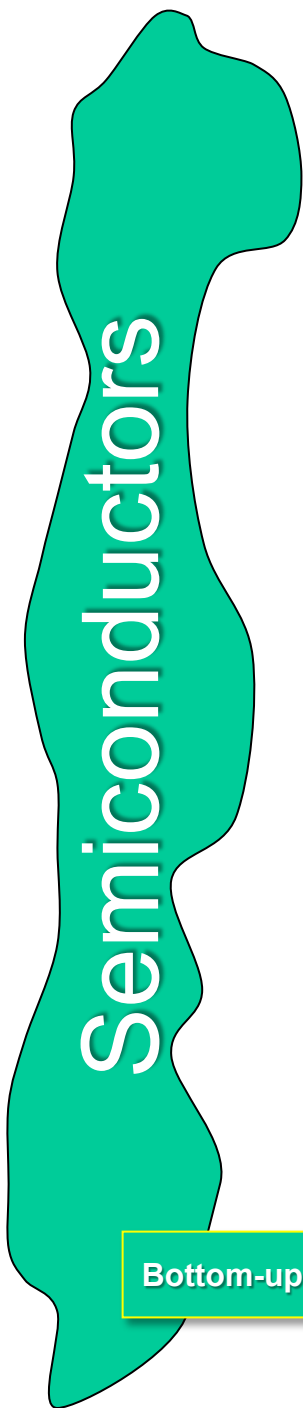


Bottom-aware top-down design

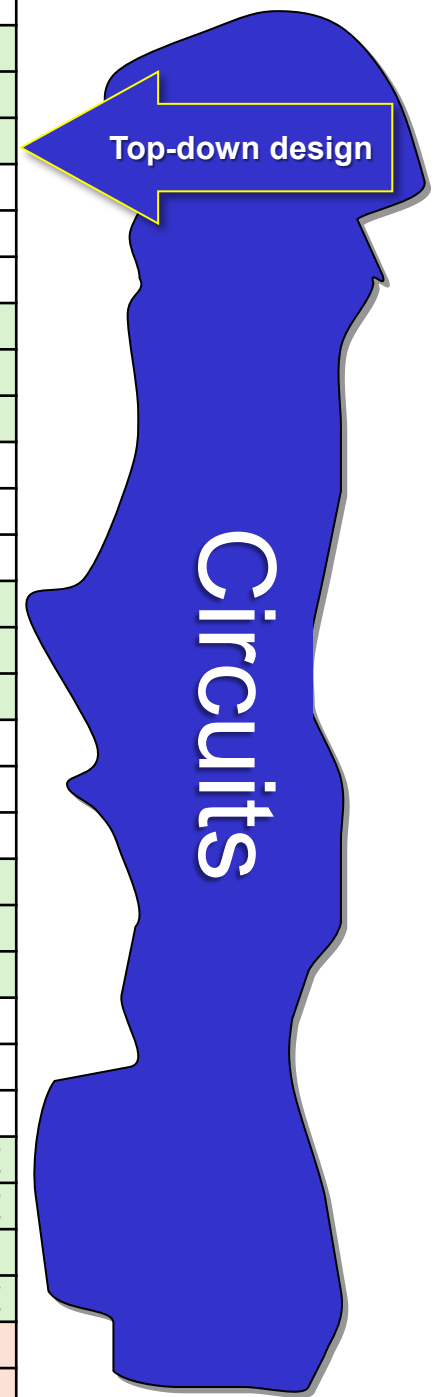
Semiconductors

Circuits

Bottom-up design



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Bottom-up design

# Books

## Electronics

**Structured Electronics Design:  
A Conceptual Approach to Amplifier Design, 3rd ed.**  
*Anton Montagne*

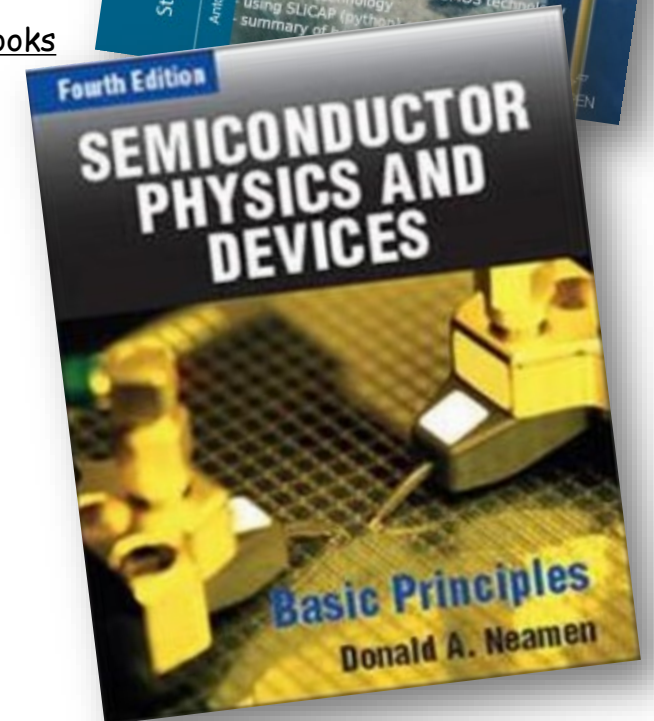
Download PDF or order hardcopy via TU-Delft Open Textbooks

[Structured Electronics Design: A Conceptual Approach to Amplifier Design, 3rd ed. | TU Delft OPEN Textbooks](#)



## Semiconductors

**Semiconductor Physics and Devices; Basic Principles**  
Donald A. Neamen  
McGraw-Hill International Edition, (4<sup>th</sup> edition)



# Companion Website for Structured Electronics Design

For the **Electronics** part, all study materials can be found on the companion website:

 <https://analog-electronics.tudelft.nl/>

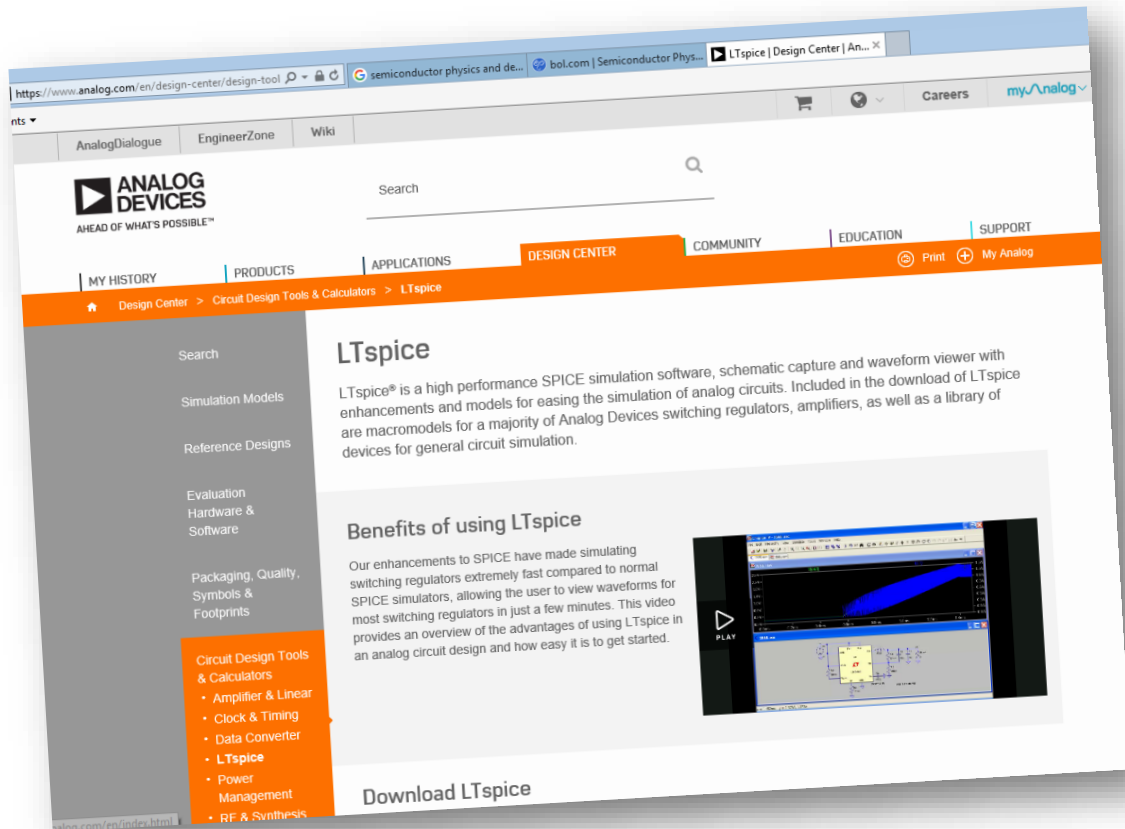
By following this link:

 <https://analog-electronics.tudelft.nl/EE3C11-2024-2025/courseWebSite/index.html>

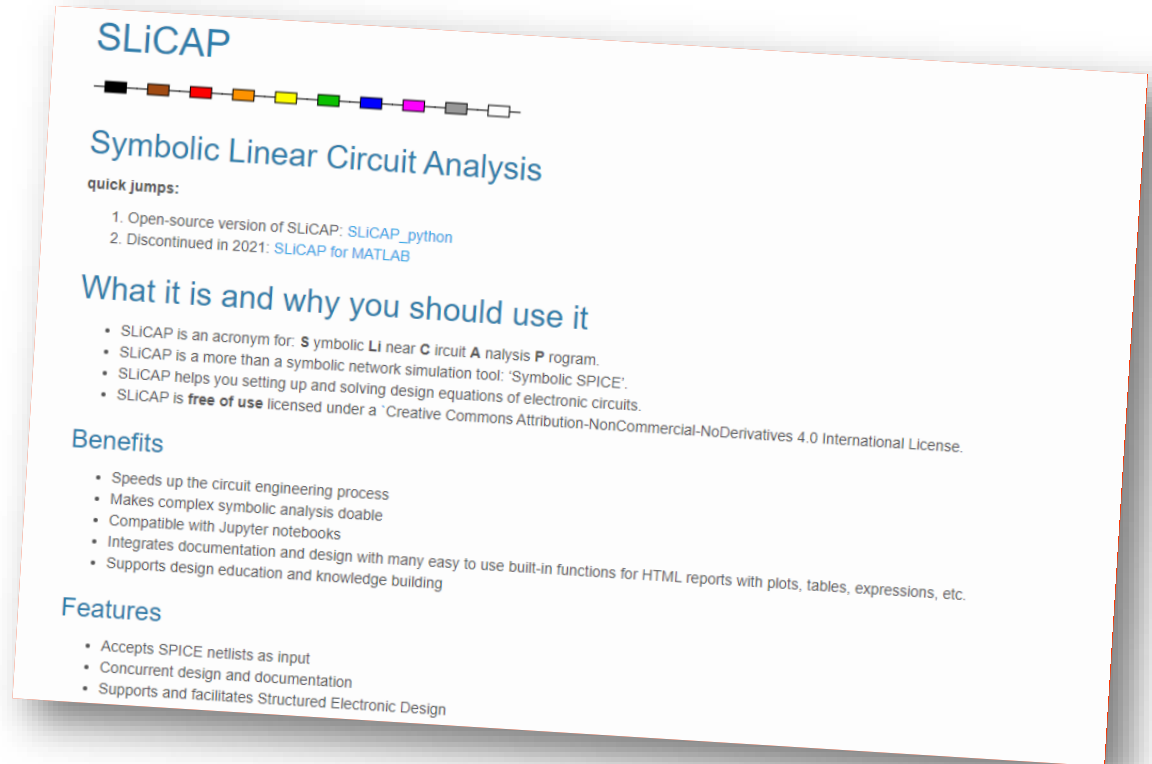
you will have access to all relevant information, including presentations, video links, downloads, and assignments.

We have chosen to use a **companion website** because it is frequently accessed by (international) students who may not have access to the **Brightspace** pages of TU Delft.

# Software



**LTspice®: Simulation, Schematic capture and Waveform viewer**



**SLiCAP : To set up and solve Design Equations of electronic circuits.**

**To create design documentation**

(SLiCAP is a Python application: you need a laptop with e.g. Anaconda)

# Exam

**Multiple choice** + maybe some open questions that need short answers

## Two parts

- 1) Semiconductor physics
- 2) Structured Electronics Design (SED)

**Open book** (course books, handouts, and slides)

## SED grade can also be obtained via design assignment

Team project 4-6 students

**Design, build, test**, and evaluate results during the lecture period

Assessment via **design review**

Assessment grade replaces grade for SED part obtained during the exam if higher  
(Remains valid for the re-sit)

# Semiconductors

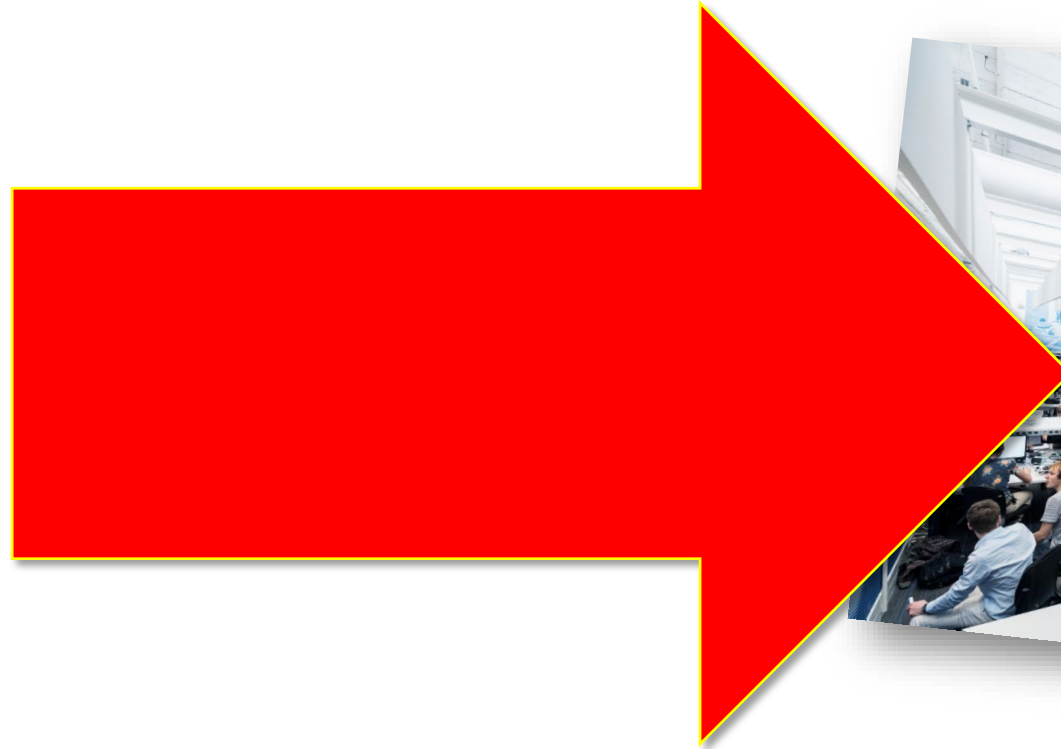
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# Circuits

Top-down design

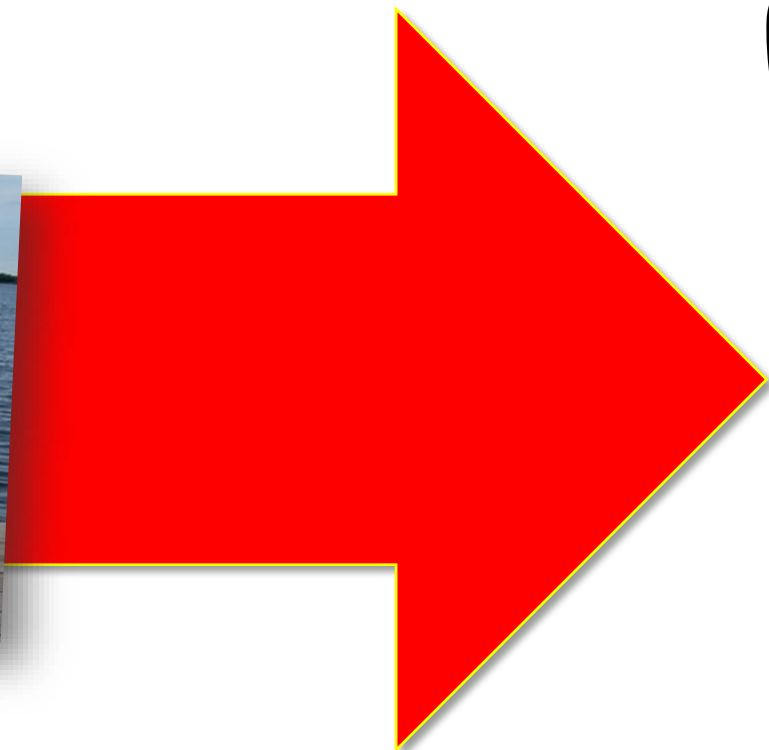
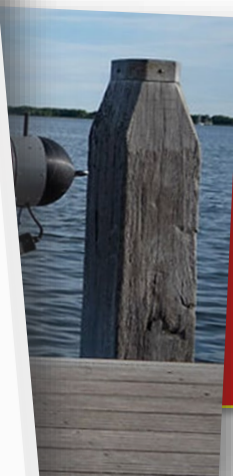


# A



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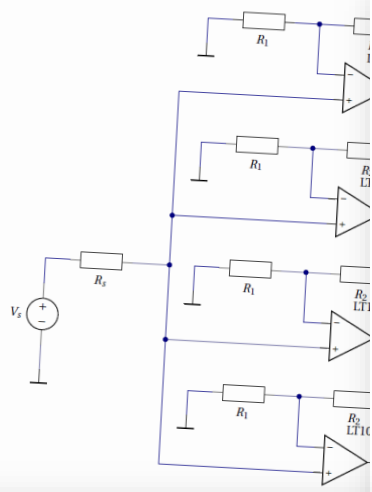
# Example



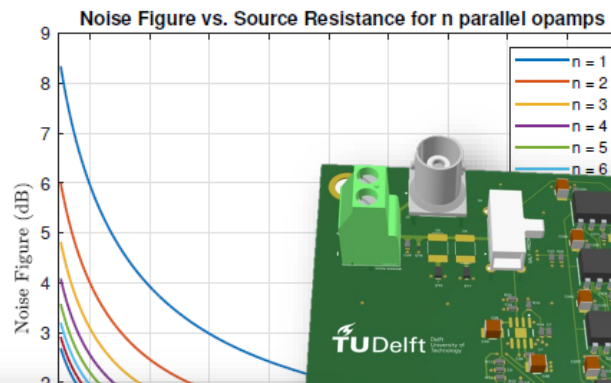
<https://www.lobster-robotics.com>

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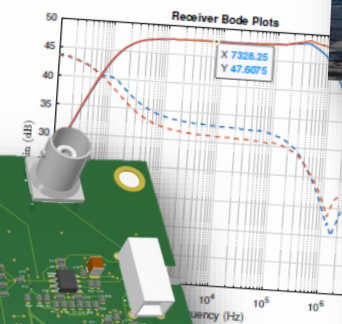
## 4.2. SEAWATER AMPLIFIER



## 4.2. SEAWATER AMPLIFIER



## 6.3. TESTING THE TRANSMITTER



Subsea Communication System using Electric Fields Hardware Design



TU Delft University of Technology Challenge the future

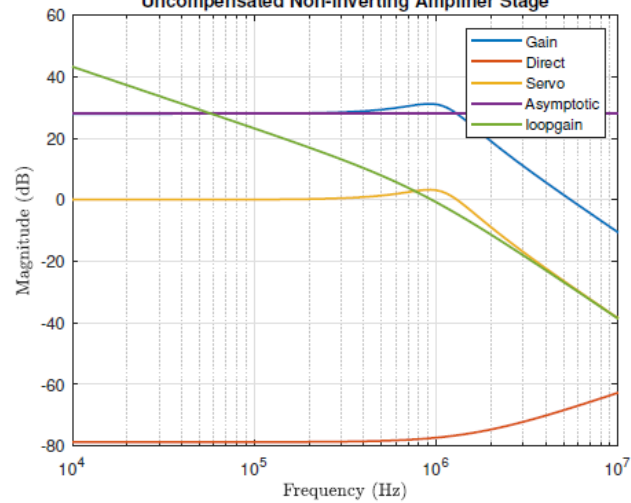
NATURE WORK

Incredible! Unique With Human-Like

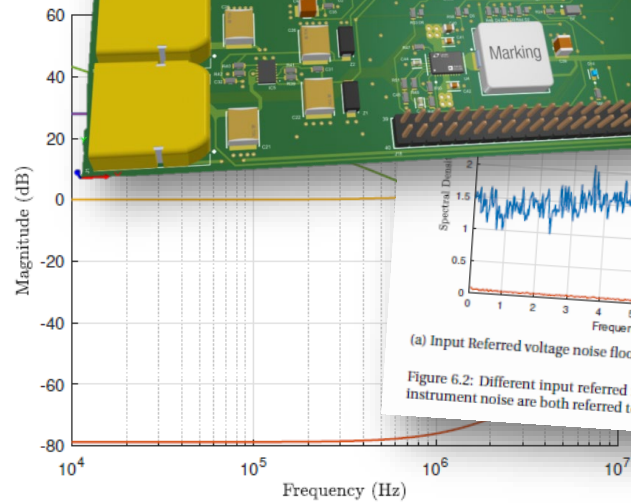
By Precious Smith Jun 09, 2022



### Uncompensated Non-inverting Amplifier Stage



(a) Uncompensated Non-inverting Amplifier



(b) Compensated Non-inverting Amplifier

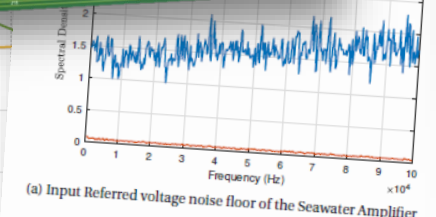
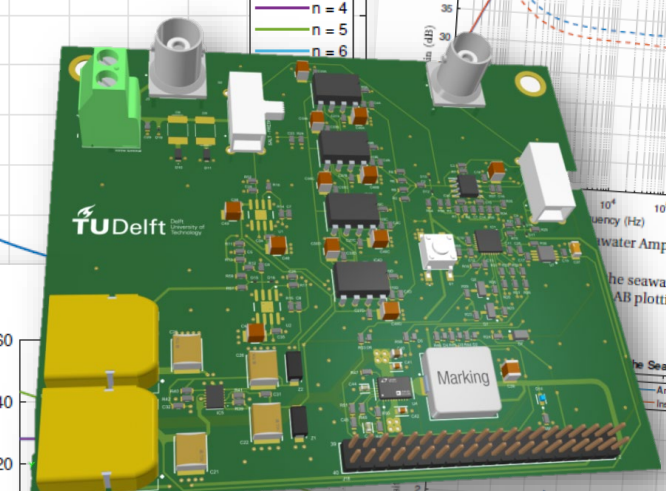


Figure 6.2: Different input referred noise floor measurements using the amplifier noise floor and instrument noise floor are both referred to the input of the amplifier and are



Design, **build, test**



# Semiconductors

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