Virtuoso 23.1
Module 1 – Getting Started

American University of Beirut (AUB)
Lebanon

Version History

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- Version 2: Raoul Saber, Robin Kordahi
- Version 1: Raffi Der Yeghiayan

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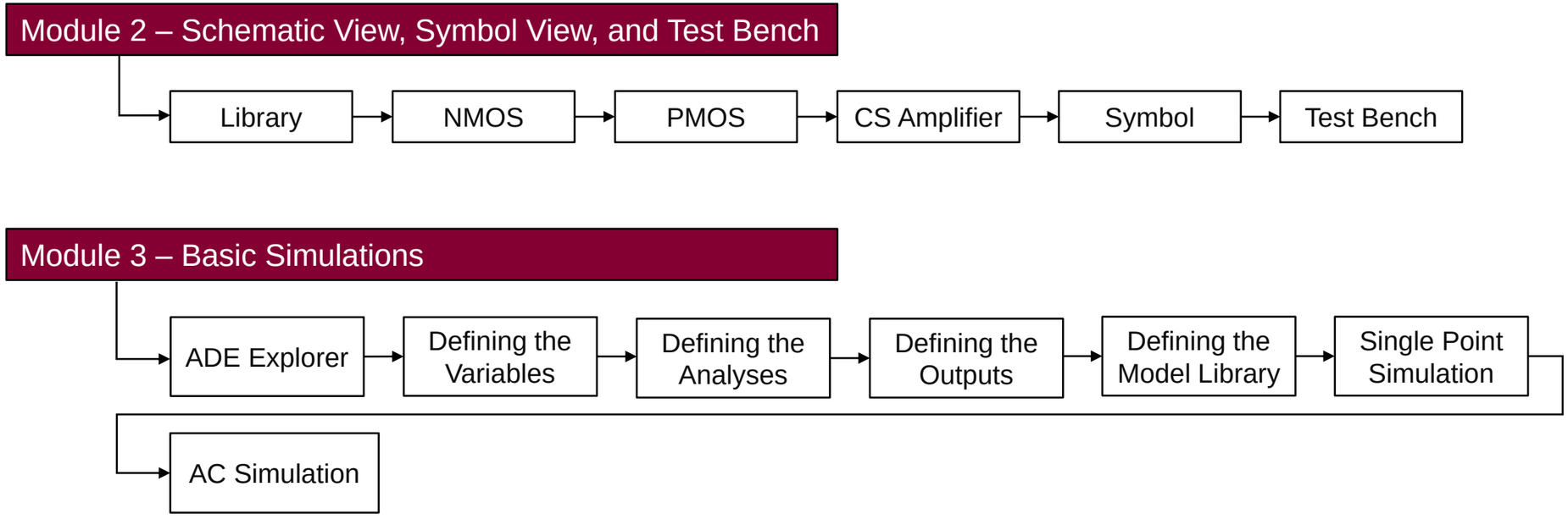
Virtuoso Education Kit – Contents

I- Basic Front-End Tasks



II- Advanced Front-End Tasks

Module 4 – Specifications, Corners, and Real-Time Tuning

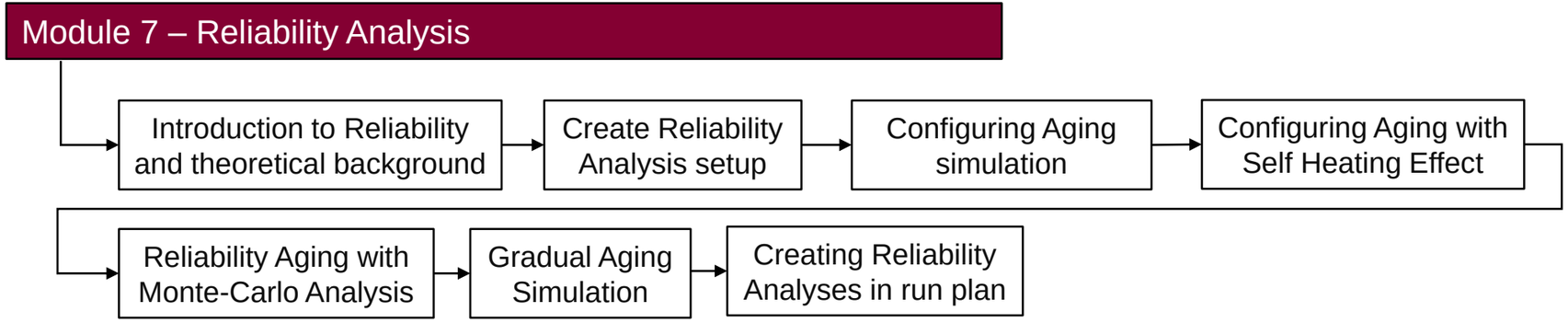
- Adding Specs to the Design
- Sweeps and Corners
- Setting up Sweeps and Corners
- Running Simulations and Analyzing Results
- Waveform Balloons
- Real Time Tuning

Module 5 – Monte Carlo Statistical Analysis

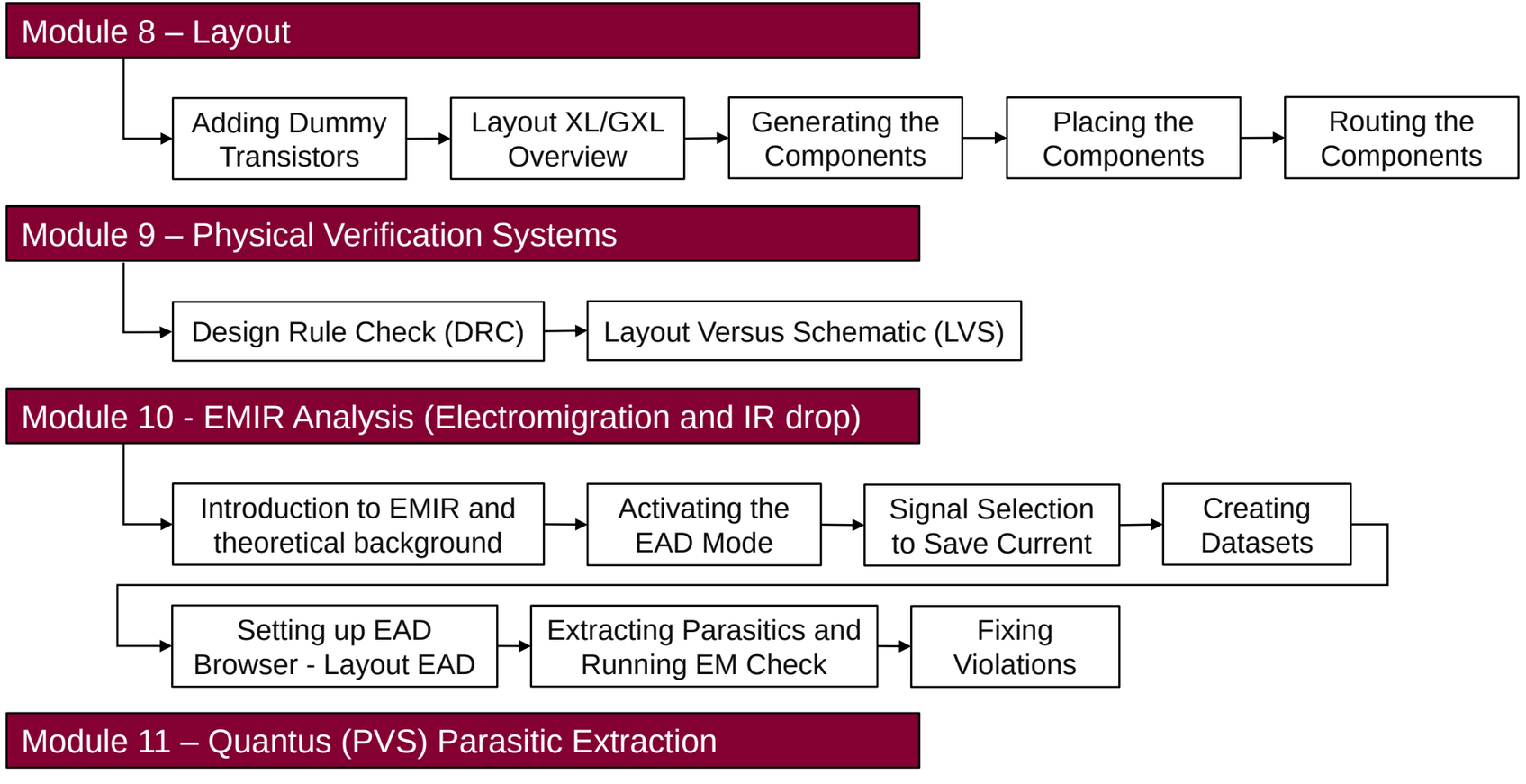
Module 6 - Measurements Across Corners Using ADE Assembler

- Migrating from ADE Explorer to ADE Assembler
- Sweeping Variables for each Testbench
- Measurements Across Sweeps and Corners
- Monte Carlo Analysis

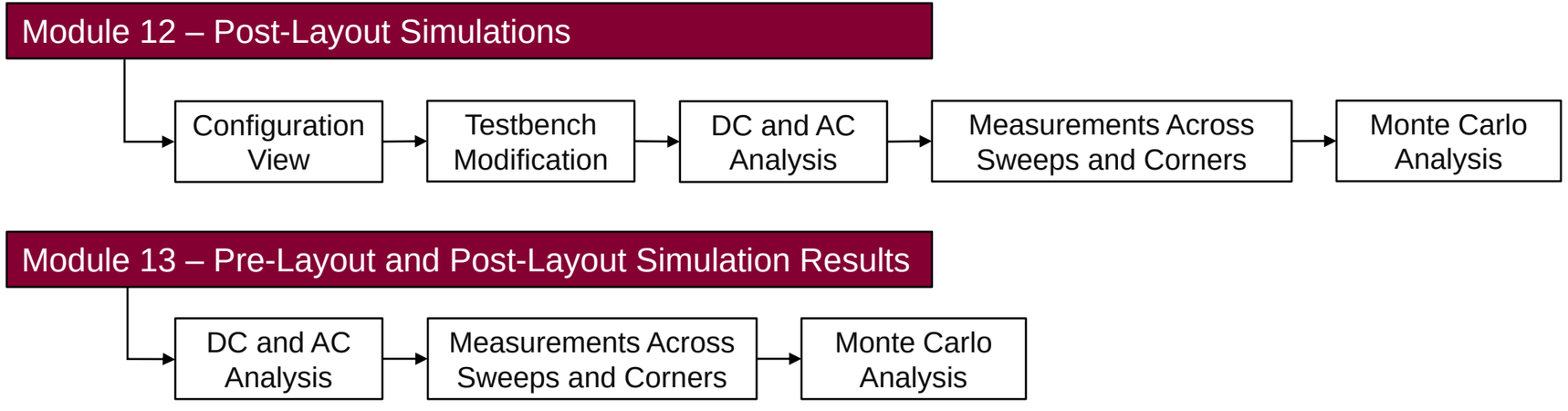
II- Advanced Front-End Tasks (*continued*)



III- Back-End Tasks



III- Back-End Tasks (*continued*)



Tools Needed

- Virtuoso Custom IC Design Environment (IC 23.10.080)
- Spectre Circuit Simulators (SPECTRE 23.10.538)
- Physical Verification System (PVS 23.11.000-ISR1)
- Quantus Extraction Tools (QUANTUS 22.11.000)

Technology

The 45nm Generic Process Design Kit (“GPDK045”, Version 6.0) provided by Cadence Design Systems, Inc. (“Cadence”) is used in all the modules.

Note

You may start from any Module by using the compressed file attached in the Index, which contains the design files.

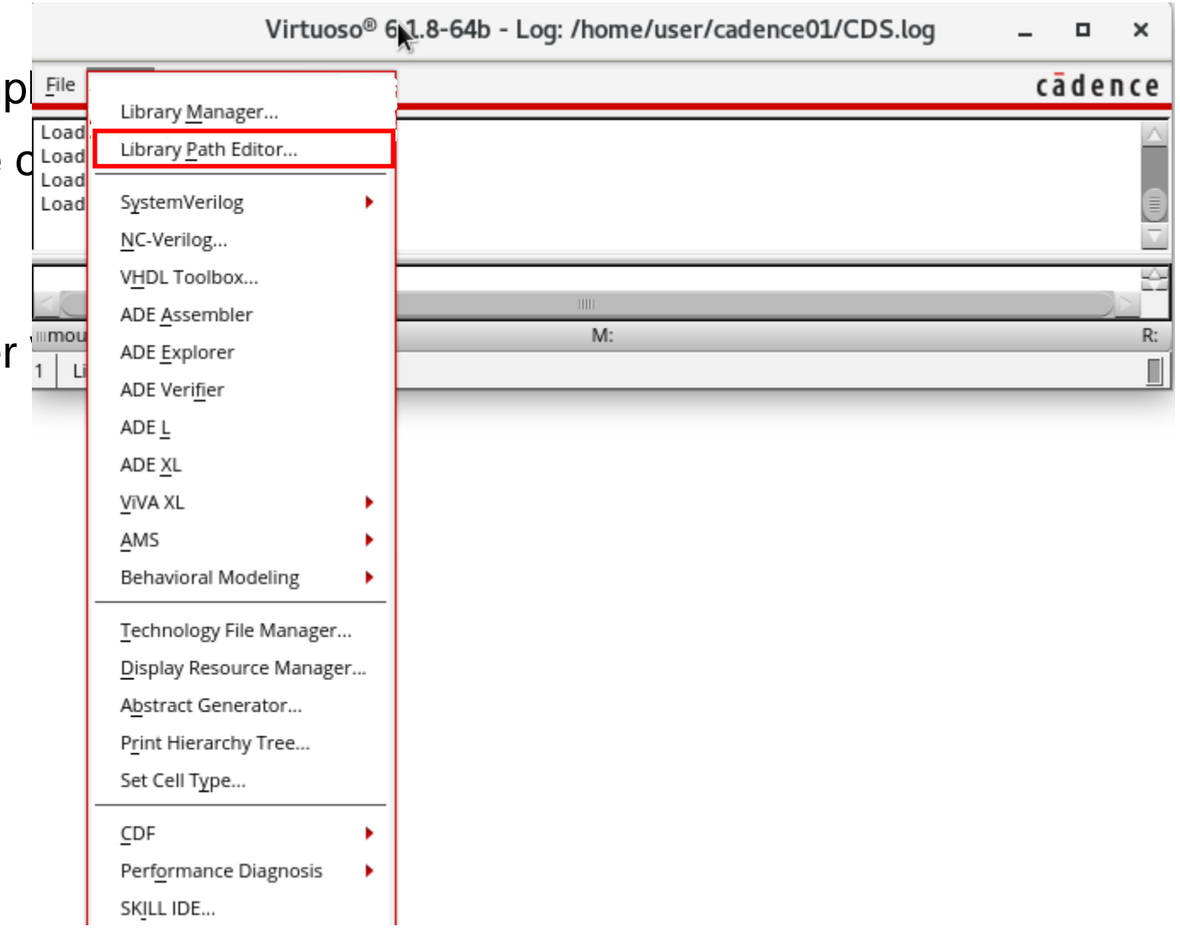
First, you need to place the compressed file in your working directory. Second, you need to decompress the file. Finally, you need to add the file (library) in the Library Manager using the Library Path Editor. The next few slides explain how to add the library in the Library Path Editor.

To decompress the file, you can use the terminal and the command “tar -xzvf amplifier_common_source.tar.gz”. Note that if you had previously created the library “amplifier_common_source” in your working directory and at a certain point you decided to decompress the file, the tool will overwrite the existing library.

If the compressed file isn’t available, you may skip Module 1 and start with Module 2.

Adding a Library

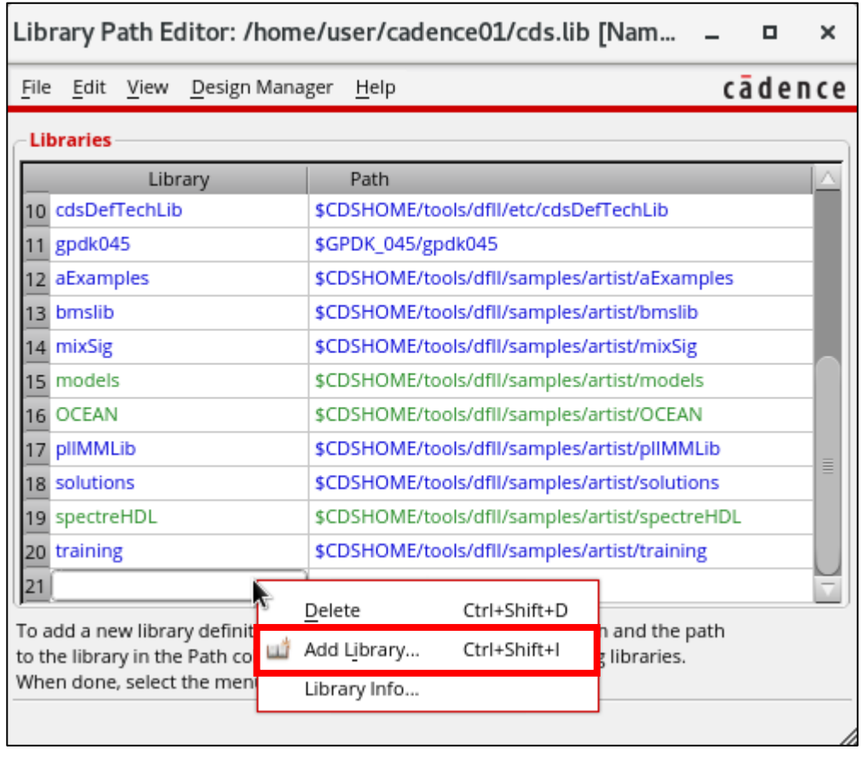
- Place the compressed file “amp
- Open the terminal and use the c
  decompress the library.
- Launch Virtuoso.
- From the Command Interpreter



- If the compressed file isn’t available, you may skip Module 1 and start with Module 2.

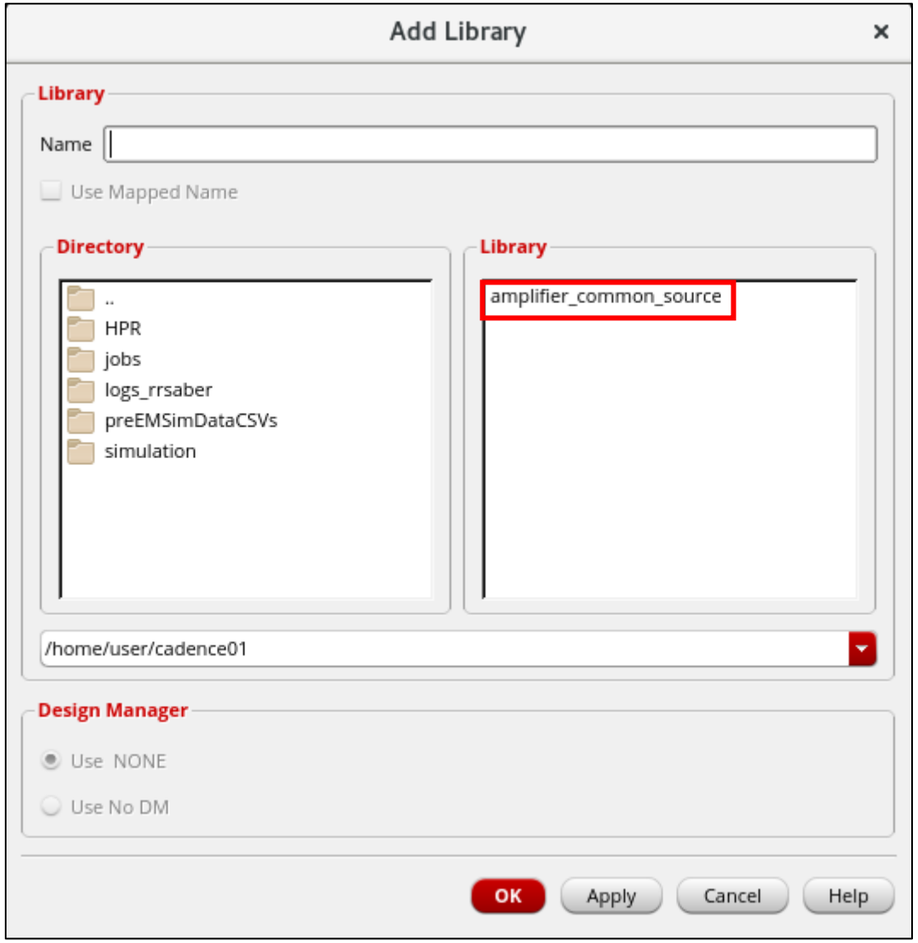
Adding a Library *(continued)*

- Right-click and select Add Library.



Adding a Library *(continued)*

- Choose your working directory. The working directory in this case is “/home/linuxuser/cadence01”.
- Select the library “amplifier_common_source” and click OK.



Adding a Library *(continued)*

- Select File → Save.
- Close the Library Path Editor.
- You can now access the design files from the Library Manager (CIW → Tools → Library Manager).