



---

**Due date April 26<sup>th</sup>, 2018**

Pick one of the following research topics:

- 1) Technology Hype Cycle for Semiconductors and Electronics Technologies. (include but don't limit to: Molecular transistors, MEMS displays, Wireless power, Micro fuel cells, SoP, Reconifurable devices, FPGA in SoC, Multigate transistors, Network on a chip, Electronic paper, TSV, OLED, Memristors, Biochips, GaN ICs, Nanomaterial Supercaps, ...etc)
- 2) Three-Dimensional Silicon Integration (include but don't limit to: History, TSV, Roadmap, Silicon thinning, Si-to-Si fine pitch interconnects, design rules, modeling, applications, ...etc)
- 3) Placement and Routing Techniques in Cell-Based ASIC Design. (include but don't limit to: CAD, graph representation, circuit portioning, placement strategy, routing optimization, simulated annealing, genetic algorithm, congestion, ...etc)
- 4) Standard Cells Characterization (Types (include but don't limit to: random logic and datapath), complexity, linear delay model, power consumption, ...etc)
- 5) High k Dielectrics (include but don't limit to: types, properties growth techniques, compatibility, industrial applications)

The requirements of the report are:

- 1) 5-6 pages report
- 2) Deliver a hard- and a soft-copy of the report.