Course Description: This course will cover hardware, architecture, software, and networking aspects of energy efficiency. Students will review the recent literature on energy-aware computing and work on a practical energy-aware software and/or hardware project.

Schedule: Mon and Wed 2-4pm, IC-351.

Office Hours: Scheduled on-demand by email (wanner@unicamp.br)


Prerequisites: Students should be familiar with computer architecture, basic networking, and low-level programming. MC404 (or an equivalent course) is strongly recommended. MC504, MC602, and MC732 are recommended but not required.

Program: • Measurement, sensing, and modeling of energy consumption • Process, Voltage, and Temperature (PVT) variations • Hardware-level techniques • Dynamic power management • Energy proportionality • Duty cycling • Energy and Power-Aware Scheduling • Energy bugs • Low-Power networking • Battery modeling and management

Course components:

Literature review: (L) Students will write a one-page summary and review of selected papers. One student will present and lead the discussion for each paper in class.

Take-home exams: (E) including theoretical, analytical, and practical (implementation) problems.

Project (P): practical implementation project, including implementation, evaluation, presentation and paper describing the results.

Grading: Final grade $F$ will be given by:

$$ F = L \times 0.3 + E \times 0.3 + P \times 0.4 $$

where $L$ is the arithmetic mean of the grades for the literature review assignments, $E$ is the arithmetic mean of the grades for the take home exams, and $P$ is the grade for the project. MO632 students will be awarded letter grades according to the following criteria: A: $F \geq 8.5$, B: $8.5 > F \geq 7.0$, C: $7.0 > F \geq 5.0$, D: $5.0 > F$. No makeup or supplementary exams will be offered.

Bibliography:
• Recent papers from the energy-aware computing literature.

Academic integrity: Any attempts at plagiarism and receiving or giving aid on assignments will result in a final grade of zero in the course.