1. PLC history
2. Basic architecture of PLC hardware
3. I/O modules for PLCs
   - digital I/O modules;
   - analog I/O modules;
   - sourcing and sinking terminals;
   - misc. modules:
     - counters
     - timers
     - special sensors (encoders, resolvers, LVDT, motor drives)
     - handheld terminals
     - communication modules:
       - to remote I/O
       - to industrial networks (DeviceNet, Profibus, ControlNet, Ethernet/IP,...)
4. Fail-safe operation of PLCs
   - special hardware design;
   - watchdog operation;
   - galvanic isolation;
   - data checking (repeated measurements, CRC, parity, actuator feedback);
5. How to choose PLCs
   - system I/O demands;
   - memory;
   - CPU speed;
   - networking capabilities;
   - MTBF, self-diagnostics;
   - programming languages;
   - complex control algorithms.