

ELCOM Association

Activity ideas:

21st Nov 2024 - Quiz-ELCOM

30th Nov 2024 - Technical Talk / Workshop (VLSI) - Alumni

Practical Projects:

- Design and build a simple LED circuit
- Create a digital clock using Arduino/8051
- Build a basic amplifier using op-amps
- Design a simple robotic arm using microcontrollers
- Implement a home automation system using IoT

Circuit Design Challenges:

- Design a filter circuit to remove noise from an audio signal
- Create a voltage regulator circuit for a specific voltage output
- Design a simple power supply unit (PSU)
- Build a bridge rectifier circuit
- Design a counter circuit using digital logic gates

Programming Exercises:

- Write a program to interface a sensor with Arduino/8051
- Implement a simple algorithm for data encryption/decryption
- Create a GUI application using Python/Java for electronic device control
- Write a program to simulate a digital logic circuit
- Develop a firmware for a microcontroller-based project

Quiz and Games:

- Electronic component identification quiz
- Circuit analysis and troubleshooting challenges
- Electronics-themed crossword puzzles
- "Guess the circuit" game
- Electronics trivia night

Workshops and Seminars:

- PCB design and fabrication workshop
- Embedded systems and IoT seminar
- Digital signal processing workshop
- Power electronics and drives seminar
- Electronic instrumentation and measurement workshop

Competitions:

- Circuit design competition
- Robotics competition
- Project exhibition and presentation
- Electronics debugging challenge
- Coding competition for electronic applications

Industrial Visits:

- Visit electronic manufacturing units
- Tour research institutions and labs
- Explore electronics-related startups
- Attend electronics trade shows and exhibitions
- Visit renewable energy and power plants

Online Resources:

- Online courses (Coursera, edX, Udemy)
- Electronics forums and discussion groups
- YouTube channels (3Blue1Brown, Electronics Tutorials)
- Simulation software (SPICE, Multisim)
- Open-source hardware platforms (Arduino, Raspberry Pi)

Technical Skills:

- Circuit design and simulation (SPICE, Multisim)
- Programming (C, C++, Python, Arduino, Raspberry Pi)
- Microcontroller programming (8051, AVR, ARM)
- Digital logic design and verification (VHDL, Verilog)
- PCB design and fabrication (Eagle, KiCad)
- Embedded systems development (RTOS, IoT)
- Signal processing and analysis (MATLAB, Simulink)
- Power electronics and drives (PSIM, PLECS)

Soft Skills:

- Communication skills (presentation, report writing)
- Teamwork and collaboration (group projects)
- Problem-solving and troubleshooting
- Time management and project planning
- Leadership and initiative
- Critical thinking and analytical skills
- Adaptability and flexibility
- Professional ethics and responsibility

