NEW SUBSCRIPTION SERVICE - USE OUR HARDWARE REMOTELY FROM ANYWHERE

Immediate control of hardware via web browser

Students control real hardware experiments from their PC, Laptops or Tablets.

CloudTIMS™

HARDWARE-AS-A-SERVICE

Cost effective access to hardware experiments for your students via the internet

Professors control & monitor student usage from the secure CloudTIMS Admin page

REAL ELECTRICAL SIGNALS: NOT SIMULATION.

EXPERIMENT CAPABILITIES FOR

- Analog Electronics Courses
- Digital Electronics Courses
- Digital Communications Courses
- Analog Communications Courses

24/7

EMONA tims

www.emona-tims.com/cloudTIMS

REMOTE ACCESSED HARDWARE FOR 2 COURSES

We offer experiments for 2 courses:

- **ELECTRONICS CIRCUITS**
  netCIRCUITlabs for analog and digital electronics circuits experiments, and
- **DIGITAL & ANALOG COMMUNICATIONS**
  netTIMS-FreeWire for telecoms theory experiments.

All accessed remotely via web browser.

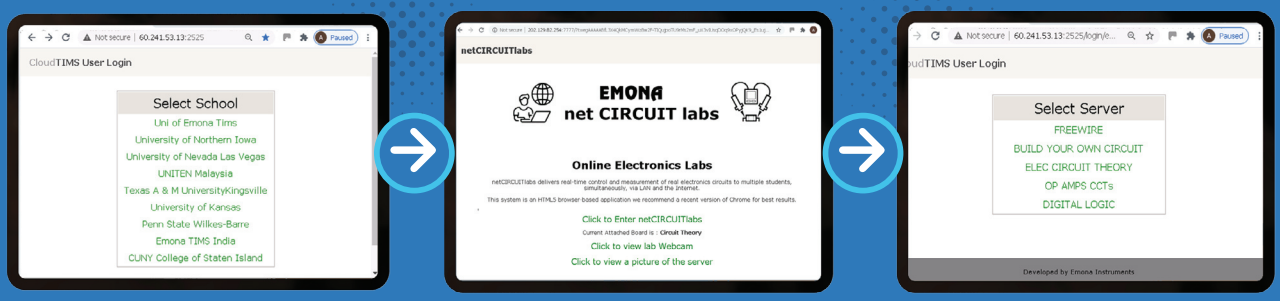
MULTI-USER EXPERIMENTS - FAST TIME-SHARE TECHNOLOGY

Implementing very fast time-share technology, hundreds of students can log on and run experiments simultaneously, with each student having a unique control of the hardware and a unique experiment experience.

SINGLE PORTAL ACCESS & PROFESSORS ADMIN CONTROL

Multiple experiment units are conveniently accessible through a SINGLE PORTAL, called CloudTIMS-Control, where a single log-in gives instant access to ALL hardware units, and Professors have access to student management, usage monitoring & evaluation.

Go to http://remote-access.education



WEB BROWSER ACCESS
Simple web browser student access: no software to download or install. Just enter the college specific shortcut URL

NOT SIMULATION
All signals and all waveforms are LIVE and REAL TIME, including oscilloscope display, spectrum display and meter measurements.

HIGH CONFIDENCE/RELIABILITY
Available to your students 24/7. Visit **https://status.remote-access.education** to see Service Status monitored by UptimeRobot

FLEXIBLE SUBSCRIPTION TIMING
Minimum term 8 weeks. Flexibility to choose start and end dates according to the department's semester schedule.

Communications Theory Experiments via CloudTIMS

netTIMS-FreeWire - TELECOMS Experiments

Students patch together experiments with a selection of 22 TIMS modules to build 40+ digital and analog telecoms experiments

START › SELECT › WIRE › MEASURE › EXPLORE

The list of Experiments that can be performed on netTIMS-FreeWire is listed below.

- Modeling equations
- DSBCS generation
- Product demodulation
- AM method I
- AM method II
- Envelope detection
- SSB mod and demod
- Armstrong's phase modulator
- FM - WBFM mod. by VCO
- FM demo by zero crossing
- Sampling and reconstruction
- PDM generate and demux
- PWM mod and demod
- Carrier acquisition by PLL
- Complex analog messages
- PCM encoding and decoding
- ASK mod and demod
- BPSK mod and demod
- QPSK mod and demod
- FSK modulation
- Signal constellations
- Eye patterns
- The noisy channel
- Line coding and decoding
- QAM mod and demod
- Intro to QASK
- PCM-TDM
- BPSK in a noisy passband channel
- Intro to PAM-TDM
- Noise generation using binary sequences
- AM demodulation and SNR
- Principles of spread spectrum

Electronics Circuits Experiments via CloudTIMS

REL 2.0 CIRCUIT THEORY Experiments Board

- User wires together R, L & C circuits, on-screen, in real time.
- User has access to full function test instrumentations.
- Two professor breadboarded RLC circuits, labelled H1 and H2, ideal for student testing.

EXPERIMENT CAPABILITIES

- Voltage and Current Measurements
- Series and Parallel Resistance Circuits
- Ohm's Law and Series Circuits
- Parallel Circuits
- Series-Parallel Circuits
- Kirchhoff's Laws
- Thevenin's Theorem
- Power
- Alternating Current
- Capacitors Charge and Discharge
- RL and RC Circuits
- Second Order RLC Circuits
- Two USER DEFINED circuits

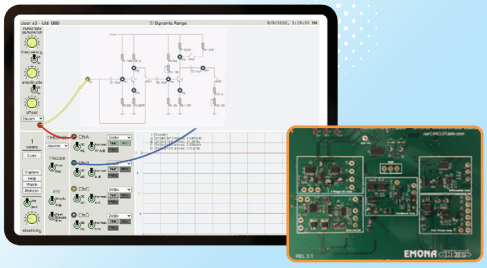
USER FEEDBACK

"....the students are engaging with the remote hardware in a way that I would not expect for a simulation experience. I am glad that we were able to arrange this experience for them, and my department head and I have begun discussing how we might integrate remote hardware labs into our future curriculum in future 'normal' times."

REL 2.1 TRANSISTOR CIRCUIT Experiments Board

Experiment Capabilities

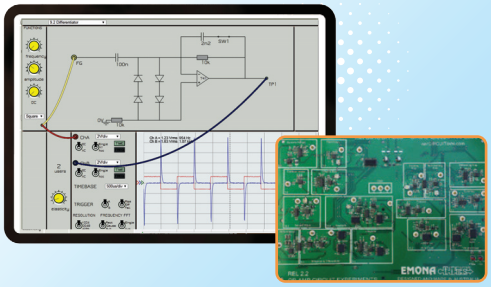
- Voltage divider biasing
- DC quiescent conditions
- AC performance of CE BJT
- Unloaded voltage gain
- Loaded voltage gain
- Cascaded amplifiers
- Max pk-pk output voltage
- Emitter resistor by-pass capacitor
- Negative feedback
- Differential amplifier
- SCR operation
- SCR dimmer
- OTL amplifier



REL 2.2 OPERATIONAL AMPLIFIER Experiments Board

Experiment Capabilities

- Dynamic range & slew rate
- Open loop gain
- Input offset & bias
- Common Mode Rejection Ratio
- Inverting amplifier
- Non-inverting amplifier
- Voltage follower
- Summing amplifier
- The integrator
- The differentiator
- Combined integration & differentiation
- Squarewave generator
- Duty cycle
- Triangle wave generation
- Sawtooth wave generation
- Differential amplifier



REL 3.0 DIGITAL LOGIC Experiments Board

Experiment Capabilities

SIGNAL SOURCES

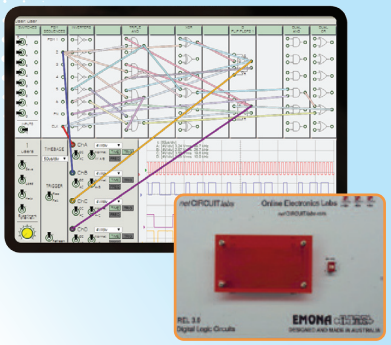
- HI/LO Logic Switches x 8
- 8 bit Binary Counter
- 4 bit Gray Counter
- 4 bit Johnson Counter

OVER 60 GATES & FLIP-FLOPS

- 2, 3 & 4-input OR gates
- X-OR gates
- 2, 3 & 4-input AND gates
- Inverters
- S/R, D & J/K Flip-Flops,
- Inverters
- Finite State Machines

STUDY

- Boolean logic and algebra
- Combinatorial circuits
- Truth tables
- Karnaugh Maps
- Quine-McCluskey method
- Designing Synch & Asynch sequential circuits
- Flip flops
- State diagrams
- Design of Finite State Machine
- Registers, Counters, Multiplexers, Encoders, etc
- Introduction to HDL (Verilog)



All discrete logic elements and dynamic user-made inter-connections are implemented within an FPGA.

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