

College of Technology - Next Generation Manufacturing Resource Center's Resources for Educators: Engineering and Technology Lessons for Online Learning - Spring/Summer 2020			
Area	Title	Web Link	Details
AC - DC ELECTRONICS	MultiSim Live	https://www.multisim.com/	Very similar to the commercial MultiSim
AC - DC ELECTRONICS	TinkerCAD circuits	http://www.tinkercad.com	Within TinkerCAD there is a Circuits module. Students can set up protoboards demonstrating their ability to set up circuits. You can also set up classes.
AC - DC ELECTRONICS	PHET Simulations	https://phet.colorado.edu/	Many simulations. The HTML versions will run on any computer.
AC - DC ELECTRONICS	DCLabs	https://dclab.com/en	Full version is available upon request
AC - DC ELECTRONICS	Mark Rutkowski, PE, Professor, Engineering Technology, Luzerne County CC	https://www.youtube.com/user/MarksTechTock	Electronics lectures
AC - DC ELECTRONICS	William Kleitz, Professor Emeritus Electrical Engineering Technology, State University of New York – TompkinsCortland	http://youtube.com/user/billkleitz	Electronics - quasi-interactive video lectures. Pearson moved the Student Resources Website to a new url. These resources will supplement your online instruction by providing Quartus and VHDL solutions to the FPGA examples and problems; Solutions to MultiSim Examples and Problems; and multiple choice, true/false questions. To download the files the new url can be found at: http://www.pearsonhighered.com/careersresources/ Select "Browse by Discipline" and you'll find Digital Electronics with VHDL 9th edition under "electronics". (These use earlier versions of Quartus and MultiSim, but still work with the circuits presented).
AC - DC ELECTRONICS	Matrix TSL	https://www.matrixsl.com/flowcode/elearning/	Has offered a free license of Flowcode for the duration of the virus crisis. Flowcode is an incredible tool and has a ton of capability including coding for any microcontroller (Arduino, PIC, Raspberry Pi and so forth) and things like simulation for robotics and other automated systems.
AC - DC ELECTRONICS	TinkedCAD circuits	https://www.tinkercad.com/	Autodesk product has a circuits component. Breadboarding, oscopo, signal gen, Arduino modules. Ability to set up a classroom.
ELECTROMECHANICAL	LVVL Sim Electromechanical	https://www.festo-didactic.com/ca-en/news/special-offer-for-electric-power-technology-teachers-free-access-to-lvslim-ems.htm	Electromechanical Simulator
FLUID POWER	Hydraulic Simulator	http://learningobjects.durhamcollege.ca/fluidpower/	Pneumatic/Hydraulic sim based on LabVolt Trainers - the link is the download. Students can build and run circuits, but the gauges will not work...so no pressure readings.
FLUID POWER	LVVL Sim	https://www.labvolt.com/solutions/3_fluid_power/98-6387-00_hydraulics_and_pneumatics_simulation_software_lvslim_hyd_pneu	Great free Hydraulics Simulator - 9 Circuits
FLUID POWER	Automation Studio	https://www.famictech.com/en/Products/Automation-Studio/Educational-Edition	Famic Technologies provides libraries of components to create and simulate hyd, pneum, and electrical circuits. FREE ACCESS for 60 days.
FLUID POWER	William Kleitz, Professor Emeritus Electrical Engineering Technology, State University of New York – TompkinsCortland	https://www.youtube.com/playlist?list=PLBOhtamYB1hJ8CjIOh2F9kCQwcY6t5af	Video collection
FLUID POWER	SMC International Training	https://www.smctraining.com/en/newpage/indexnews/61	Instructor portal with downloadable process equipment simulations. Available by request from Marina Veraha, Southern Educational Systems mveraha@seslabs.com
ROBOTICS	RoboDK	https://robodk.com/	30-day free trial, will get you to the end of the semester. Lots of How-To on YouTube.
ROBOTICS	RoboStudio	https://new.abb.com/products/robotics/robotstudio/downloads	ABB Robotics Sim...basic version is free.
ROBOTICS	Universal Robots	https://academy.universal-robots.com/online-training/e-series-online-training/	Really good, interactive e-learning; 11 modules - 224 minutes of content.
ROBOTICS & COMPUTER SCIENCE	SHPERO	https://sphero.com/pages/educators	App-enabled robots to teach coding and problem-solving.
MULTI TOPIC	Connecticut Advanced Manufacturing Initiative/ CT State Colleges & Universities	https://www.youtube.com/playlist?list=UUxjA4-9w0meFuVB6rBxPoNw&app=desktop	Training videos for CNC Milling, CNC Lathe, Gas Metal Arc Welding, Surface Grinder, Trimming a Head, Squaring a Vice, and Using and Edge Finder. Funded by the USDOL.
MULTI TOPIC	Big bad Tech, Jim Pytel, Columbia Gorge CC	https://www.youtube.com/user/bigbadtech https://openoregon.pressbooks.pub/electronics2/ https://openoregon.pressbooks.pub/electronics3/ https://openoregon.pressbooks.pub/hydraulics/	Jim Pytel has posted 600+ free online video lectures on basic electronics, hydraulics, and motor control and a few study guides for electronics.
MULTI TOPIC	Jim Fiore, Professor, Electrical Engineering Technology, Mohawk Valley CC	https://www2.mvcc.edu/users/faculty/jfiore/freebooks.html	Semiconductor Devices; Operational Amplifiers, Embedded Controllers, Using C, Arduino, DC Circuit Analysis, AC Circuit Analysis, Computer Programming with Python and Multisim, Science of Sound.
MULTI TOPIC	Peter Burton burton.producer@GMAIL.COM	https://www.youtube.com/channel/UCJALws4XTgLyNvXnKpJ-g/playlists	Quasi-interactive videos which are educational videos addressing a wide range of topics in Electronics from DC Circuits, AC Circuits, Complex Power, Operational Amplifiers, Mathematical Methods, Digital Oscilloscopes, CMOS Circuits, Digital Design and Analog Electronics. So far there are 128 Videos with each averaging 10 minutes.
MULTI TOPIC	Amatrol	www.amatrol.com and https://www.dcaegercorporation.com	Amatriol is offering discounted pricing for access to all their content through the end of the semester. Additionally, 30-day free demos for individual topics are also available.
MULTI TOPIC	NC3	https://www.nc3.net/keep-cte-moving/	NC3 certifications can be applied across multiple industries; therefore, creating flexible, stackable, and relevant credentials to students and employers of all kinds.
MULTI TOPIC	Festo (Mindsight)	https://www.nc3.net/wp-content/uploads/2020/03/Free-MindSight-Access.html	Festo Didactic is offering free access to its eLearning Platform: Mind-Sight, a SCORM-compliant learning content management system (LCMS). Electricity and Energy, Industrial Technology, Manufacturing Technology, other topics.
MULTI TOPIC	Wisc-online	https://www.wisc-online.com/	Electronics, Manufacturing, Engineering, Science learning objects
MULTI TOPIC	Kahn Academy	https://www.khanacademy.org/	Electronics, Electrical Eng, computer science and engineering, physics, many others
MULTI TOPIC	Educate Workforce (Clemson U)	www.educateworkforce.com	13 FAA General Curriculum Courses (includes physics, math, etc) and 4 other online courses that are FREE (anyone can register) FAA Part 147 – Contact Therese M Schustrich therese.schustrich@toolingu.com
MULTI TOPIC	Tooling-U	https://www.toolingu.com/	180 Skills works with manufacturers and educators to create the world's largest library of skills training for the manufacturing sector. We make and deliver skills training for the next generation of workers for the world's premiere aerospace, automotive, and commercial manufacturers.
MULTI TOPIC	180 Skills	http://www.180skills.com	
MULTI TOPIC	IJ Create	http://www.ijcreate.com/us/	Over 1200 hours of online presentations, labs, and assessments for advanced manufacturing, automotive technology, electric and electrical technology, information technology, logistics warehousing and distribution, health science, business skills, and support materials.
CAD	CADCIM Technologies	www.cadcim.com	Video Lectures: AutoCAD: A Problem-Solving Approach; SOLIDWORKS for Designers; CATIA V5-6R for Designers; Siemens NX for Designers; Exploring Autodesk Revit for Architecture; Autodesk 3ds Max for Beginners; and others by REQUEST at techsupport@cadcim.com
CAD	Autodesk	https://academy.autodesk.com/	Free Autodesk Curriculum and Courses Includes: TinkerCAD, Fusion 360, AutoCAD, Revit, Inventor, and others Autodesk Fusion 360 Education (free) - https://www.autodesk.com/campaigns/education/fusion-360
CONTROLS	Quanser	https://www.quanser.com/experience-controls/	Very good FREE ebook. Most of the chapters have online lab exercises that are done with simulation and they also have a set of actual equipment that is online. You can control these experiments remotely using the app. It's all free and works from any mobile device. There are instructor resources as well so it's a pretty robust solution.
CONTROLS	FESTO EasyVEEP	https://www.festo-didactic.com/int-en/learning-systems/software-e-learning/easyveep/easyveep.htm?fbid=aW50LmVuUjU1Ny4xNy4xOC44NTMuNDY2Nw	Good, easy to use PLC simulator. YouTube tutorials: https://www.youtube.com/watch?v=kX_A9Y8jb2k
CONTROLS	TAMU/Rockwell Automation Lab (Dr. Tony Hsieh)	http://people.tamu.edu/~hsieh/hsieh/Hsieh_VirtualPLC.html	Integrated Virtual Learning System for Programmable Logic Controller

CONTROLS	TAMU/Rockwell Automation Lab (Dr. Tony Hsieh)	http://people.tamu.edu/~hsieh/ICIA/curriculum.html	Classroom materials to use for PLC, Robotics, Industrial Automation, sensors, Injection Molding, CNC, Machine Tooling. (NO ACCESS to the REMOTE MACHINES is AVAILABLE, but you can visit the pages to see what /how they work)
CONTROLS	LVSIM - Industrial Controls	https://www.labvolt.com/solutions/1_mechatronics/50-3161-H0_industrial_controls_training_system_simulation_software	Industrial Controls SIM
SAFETY	wisc-online	Manufacturing PPE: https://www.wisc-online.com/learn/technical/safety/cad0519/manufacturing-ppe-mini-sim .	Excelsior College/Polk State ATE funded Manufacturing PPE simulations
SAFETY	wisc-online	Electrical PPE: https://www.wisc-online.com/learn/career-clusters/architecture-and-construction/ace14319/electrical-ppe-mini-sim	Excelsior College/Polk State ATE funded Electronics PPE simulations
MISCELLANEOUS	mansour.mansour@qurtubacs.com	https://www.qurtubacs.com/post/a-practical-guide-for-transitioning-your-course-to-lms	Practical guide to help quickly transition your course and/or training program to online platforms. In particular, the focus of the article is on utilizing learning management systems (LMS) to implement the 5 E's instructional model.
MISCELLANEOUS	ACTE	https://www.acteonline.org/professional-development/opportunities/distance-learning-resources/	ACTE's distance learning resources
PROCESS TECHNOLOGY	UT Austin Petroleum Extension (PETEX*)	https://petex.utexas.edu/	all e-learning (e-courses, modules, certificate programs, videos and e-books) available online at no charge to all public high schools and community colleges for the remainder of the Spring 2020 and Summer 2020 semesters. For these high schools and community colleges, we have significantly reduced our technology costs to only require a one-time \$10 per student setup fee
MACHINING & CNC	Haas Learning Resources	https://www.haascnc.com/myhaas/Haas_Learning_Resources.html?HFO=FO215&Language=en_us&utm_source=ACS&utm_medium=email&utm_campaign=HTEC_Resources_March262020&PID=0000269073&deliveryName=DM4212	A single location to access all of the resources Haas has available to help you learn to operate and program a Haas machine, and take full advantage of the power and capability of the Haas control. (There are operator-certification courses, manuals, training documents, videos, etc.)
MACHINING & CNC	CAM Instructor	https://blog.camstructor.com/tools-for-online-teaching-and-learning?utm_campaign=Mastercam%20Video%20Blog&utm_source=hs_email&utm_medium=email&utm_content=85386358&_hsenc=p2ANqtz-9SCeFP8KpSbw8r0Mdg2_yFFb8exuGP4ODX3ykpVHKy9ge8ACI80e8MNMwIVFCNoh66qE6Rsg-KgzOEQSp-1jGRpEIXqw&_hsmi=85386358	Links to various platforms and (b) online resources for machining and CNC online instruction.
MACHINING & CNC	CGTech - VERICUT	https://cgttech.com/company/educational-program.html	The CGTech Educational Program includes all the modules and licenses that your school needs for one annual fee.
3D PRINTING	MakerBot	https://pages.makerbot.com/20elearningwebinar.html?utm_source=marketo&utm_medium=email&utm_campaign=20elearning&utm_content=nurture	webinar and recording on resources for online education
METAL FABRICATION	Fabrication & Manufacturing Association	https://store.fmanet.org/PersonifyEbusiness/Store/ELEARN	Free access through April 30. Blueprint and Layout, Hand tools for sheet Metal Operators, Shearing, Math for Metal Fabrication, Metallurgy, hole punching, etc
METAL FABRICATION	Fabrication & Manufacturing Association	https://www.fmanet.org/	Through June 1, FMA provides full access to digital editions of our print publications , including <i>The FABRICATOR</i> ® and <i>The WELDER</i> ® magazines, to anyone signing up for temp access.
METAL FABRICATION	Fabrication & Manufacturing Association	https://www.fmanet.org/training/certificate-courses/fundamentals-of-metal-fabrication-certificate?utm_source=MagnetMail&utm_medium=email&utm_term=barger@fiate.org&utm_content=2020%5F2%5FCEC%5FReview&utm_campaign=CEC%20Review%20%5F0%9F%92%BB%20Resources%20Educators%20Can%20Use%20Today	FMA's Fundamentals of Metal Fabrication Certificate Program provides a capstone to your instruction. Fees waived through Aug 31. Contact Ann Schneider (anns@fmanet.org)
WELDING	Miller Electric	https://openbook.millerwelds.com/	Miller OpenBook learning management software designed to help welding instructors plan, offer, and assess student learning with engaging modules, quizzes, and assignments.
WELDING	Miller Electric	https://www.millerwelds.com/resources/welding-guides/presentations-and-quizzes	Miller electric Presentations and Quizzes (FREE)
SCIENCE LABS	Flinn Scientific	https://www.flinnsci.com/athomescience/at-home-lab-series?utm_campaign=MKT20393%20-%20Apr20-Lab-series-2-email-week-4-13-nonopens&utm_medium=email&utm_source=Net-Results&utm_content=MKT20393%20-%20Apr20-Lab-series-2-email-week-4-13#	Live and recorded virtual science labs
CYBERSECURITY	National Cyberwatch Center/Infosec Learning	https://www.nationalcyberwatch.org/programs-resources/complete-cloud-based-lab-solution/	Virtual labs mapped to National CyberWatch courses, professional certifications, and various frameworks.
CAREER PLANNING	Edge Factor	https://hubs.ly/H0p1hB80	E-Learning Tools for Career Options for Students In School Closures.
CAREER PLANNING	Regional Center for Next Generation Manufacturing/ College of Technology	http://www.nextgenmfg.org/new-page-1	Video library of student and career profiles from community college pathway program including videos with a focus on women and veterans. Funded by the National Science Foundation Advanced Technological Program.
CAREER PLANNING	Regional Center for Next Generation Manufacturing/ College of Technology	http://www.nextgenmfg.org/educators-tools	Educator Guides with activities to use with students that provide an overview of careers in manufacturing.
CAREER PLANNING	Connecticut Advanced Manufacturing Initiative/ CT State Colleges & Universities	https://www.youtube.com/playlist?list=UUxjA4-9w0meFuVB6rBxPoNw&app=+desktop	Success stories from community colleges students in manufacturing programs. Funded by the USDOL.
ACCESSIBILITY	ATE Central Webinar Resources	https://ate.is/accessate	Designing educational materials to meet accessibility standards