UNC CHARLOTTE
Department of Engineering Technology

# LABORATORY SAFETY ANALYSIS

## Operating an Oscilloscope

Location: All Smith Electrical/Computer Engineering Technology Labs.

Required Training: An Oscilloscope is designed and intended for use by properly trained and experienced operators. If you are not familiar with the proper and safe operation of the equipment, do not use until proper training and knowledge have been obtained.

Required Personal Protective Equipment (PPE): Safety glasses closed toed shoes.

Reference Materials: Manufacturer's safety rules and operating instructions

| PHOTOS | TASK | HAZARDS | CONTROLS |
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|  | Wear clear safety glasses with side shields. | Flying debris | • Students are required to provide their own safety glasses.<br>• See laboratory instructor or laboratory manager if you do not have safety glasses before proceeding to use equipment. |
| | Inspect safety glasses for cracks, scratches or other damage. Ensure the ANSI standard Z87.1 is stamped into the side of glasses. | Flying debris | • If defects are found report this to your lab instructor before using. |
| | Put on PPE | Flying debris | • Always wear safety glasses. |
| | Inspect work area. | Slips, trips & falls. | • Keep the work area free from scraps, dust, oil and grease. |
| | Preparing to operate an Oscilloscope | Shock Hazard/ Damage to the Oscilloscope. | • Read operating instructions thoroughly and completely before operating the Oscilloscope. Note all cautions very carefully.<br>• Always inspect your Oscilloscope's power cord and accessories for any signs of damage or abnormalities before every use.<br>• If the electrical cord is damaged or worn the electrical cord should be unplugged and tagged "Out of Service-Do Not Use".<br>• This should be reported to your |

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| | | | laboratory manager immediately.<br>• Electrical cord replacement should only be conducted by a factory authorized technician. |
| | Ensure the electrical cord is connected to the outlet. | Shock Hazard/ Damage to the Oscilloscope | • Caution: Always remember to disconnect the electrical power cord when operation is complete or when you leave the work station for an extended period of time. |
| | Operating an Oscilloscope | Injury/ Damage to the Oscilloscope | • This instrument is designed and tested in accordance with IEC Publication 1010, Safety Requirements for Measuring Apparatus, and has been supplied in a safe condition.<br>• Ensure that the Oscilloscope is connected to the proper 120VAC, 60Hz power source. The wall outlet MUST be a three-wire grounded type, with a good earth ground.<br>• These instruments are intended for use with 120V, 60Hz line voltage. Do not operate with 50Hz line voltages, or 220~240VAC volt power systems. The instrument may be operated safely with line voltages as low as 100V.<br>• Before applying power, verify that the correct safety precautions are taken.<br>• Never block the ventilation. This could cause excessive temperature buildups, which could cause failure or potential hazards.<br>• Use only fuses with the required rated current, voltage.<br>• If you energize this instrument by an auto transformer (for voltage reduction or mains isolation), the common terminal must be connected to the earth terminal of the power source.<br>• The mains plug shall only be inserted in a socket outlet provided with a protective earth.<br>• You must not negate the protective action by using an extension cord (power cable) without a protective conductor.<br>• Grounding one conductor of a two-conductor outlet is not sufficient.<br>• Do not operate the instrument in the presence of flammable gasses or fumes. Operation of any electrical instrument in such an environment |

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| | | | constitutes a definite safety hazard.<br>• Before turning on the instrument, you must connect the protective earth terminal of the instrument to the protective conductor of the (mains) power cord. |
| | Maintenance | Injury/ Shock Hazard/<br>Damage to the Oscilloscope. | • Keep the digital/analog trainer dry and dust free. If it gets wet, wipe it dry immediately. Liquids can contain minerals that can corrode electronic circuits.<br>• Use and store the digital/analog trainer only in normal temperature environments. Temperature extremes can shorten the life of electronic devices, and distort or melt plastic parts.<br>• Handle the equipment gently and carefully. Dropping it can damage the circuit boards and cause the function generator to work improperly.<br>• Service instructions are for trained service personnel. To avoid dangerous electric shock, do not perform any service unless qualified to do so. |
| | Clean work area and return all PPE to a clean storage area. | Injury | • Ensure adequate housekeeping measures to prevent accidents. |

For more information about this LSA, contact the *Department of Engineering Technology* at UNC Charlotte (704) 687-2305
Please visit our website at: http://www.et.uncc.edu\

***The development of Laboratory Safety Analyses is a very effective means of helping reduce incidents, accidents, and injuries in the workplace. It is an excellent tool to use for training purposes and can also be used to investigate "near misses" and accidents.***