All research students shall undergo following trainings.

Basics

Request Dr. Tate to add you on "Composite Lab" TRACS site by providing NetID. Request a 'Lab book' from Dr. Tate. It is mandatory for all to maintain up to date lab book. Request 'Key Access' to the lab from Dr. Tate. Share your 'Mobile' number with Dr. Tate and fellow researchers. You will be added to 'Composites Lab' WhatsApp Group. Meet with 'Lab-In-Charge' to know basic formalities and your designated place to sit in the lab. Read 'Lab Rules-Researchers and Frequent Users' and General Instructions for Research Students' at lab website. http://composites.engineering.txstate.edu/resources/Lab-Safety-Training.html Safety Trainings (Available on Composites Lab Tracs site) Resources > Lab Specific > Safety Presentations

a. Read 'Hazardous Communication' presentation on TRACS.

b. Read 'Hazardous Waste' presentation on TRACS.

If you will be using "Nanoroom" for handling dry nanoparticles then,

- c. Read 'Respirator Training' presentation on TRACS.
- d. Schedule a PFT (Pulmonary Function Test) with the Respiratory Care Department and pass it.
- e. Schedule to be Fit-Tested on Respirator with Environmental Health, Safety and Risk Management (EHS & RM) and pass it.

Note: You will be added to SAP trainings by EHS R&M. You will get notification from SAP. 'Hazardous Communication' and 'Hazardous Waste' are required for your job every year. Once you pass the quiz you will get certificate. This certificate must be submitted to "Lab-In-Charge."

Getting Ready for Research

Read on website www.composites.engineering.txstate.edu Equipment, Research, Education* Get familiarize to TRACS site: SOP of machines, Literature review, ASTM std. Read 'MFGE 4367 Polymer Properties and Processing' notes on TRACS and prepare notecards Resources > Course Materials > ENGR 2300, 3311 and 4367 Packets Read Resources for Research on TRACS Resources > Literature Search and Theses > Resources for Research (Grad Student) Attend Graduate Student Copyright Workshop Attend Graduate Student Thesis Workshop Request Library Training (one-on-one session): Literature Review, use of RefWork and Endnote Be expert in using MS-Word, Excel, and PowerPoint Training on SEM at ARSC (Analysis Research Service Center) at Texas State Understanding MSDS and TDS of resins and fabrics Appropriate labeling of chemicals Subscribe to Newsletters <u>https://www.composites.world.com/</u> and <u>http://www.jeccomposites.com</u>

Additional for Lab-In-Charge

GATO Intent Management Training to maintain websites (Only for Lab-In-Charge). Chemical Inventory (Getting familiar with chemicals) Master Lab Inventory (Getting familiar with locations of consumables)

Machine Specific Trainings (Dr. Tate will check mark required trainings based on your research topic)

Plastics Manufacturing Injection molding Single Screw Extruder (Polylab) Twin Screw Extruder (Process 11) **Compression molding** 3D Printer (Lulzbot and Essentium) **Composites Manufacturing** Understand fabric styles Hand layup VARTM (use THINKY and vacuum chamber) Bench oven Programmable oven Compression press Tabbing tension specimens High shear mixing Sonication Nanoroom and Glovebox protocols

Characterization

Gel time study using rotary viscometer Reading appropriate ASTM standards TMA – CTE MTS- Mechanical tests as per ASTM: tension, compression, shear, ILSS, flexure Learn how to analyze the mechanical test data MTS- Table top tester Instron Impact Tests (Biaxial and Izod) Viscometer Optical microscope Water-jet cutting Thermal imaging camera Barcol hardness Read: TGA, DSC, DMA, and TMA

Software

MTS (Multi-Purpose Testware MPT) Instron (VisualImpact) TMA (Universal Analysis) Origin Lab (for Graphs) Single Screw Extruder