

## PROSPECTUS FOR TEM WORKSHOP, 1-3 NOVEMBER 2019

**Title:** Biology 498. 1 cr. **TEM Workshop: "Using Transmission Electron Microscopy to Image Viruses and Bacteria."**

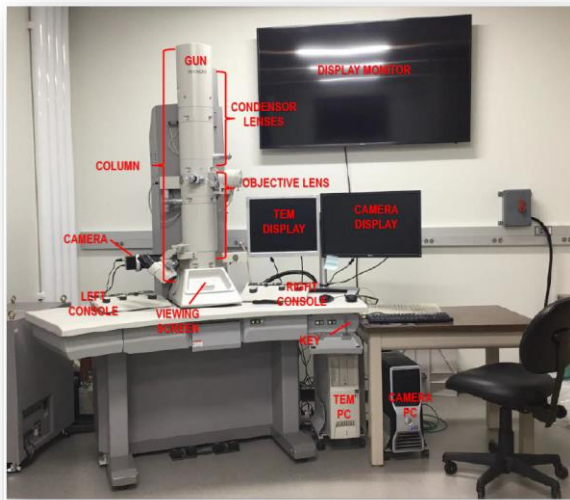
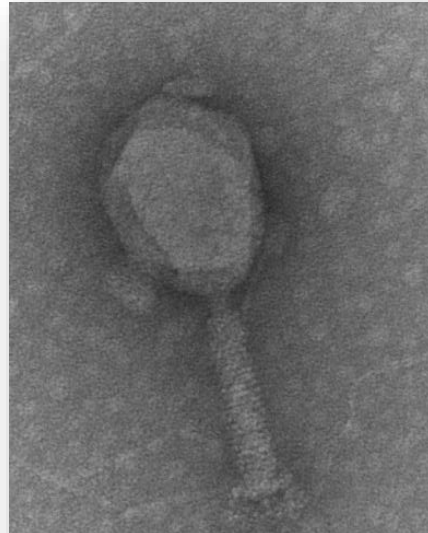


FIG 00. The Hitachi H-7500 Transmission Electron Microscope



T2 bacteriophage, with DNA still in its capsid, taken at 400,000X magnification

**Instructor:** Sol Sepsenwol, Ph.D., Emeritus Professor of Biology, CBB326, ext. 4394. **Dates:** Friday-Sunday, **November 1-3, 2019**, with 5 team tutorials (2 students/tutorial, 2 hr for each student) and one date TBS for student presentations and poster preparation. **Limit:** 10 students. **Prerequisites:** Biology 160 & 130 and one other science course with a lab; students with Biol 333 (Microbiology), Biol 319 (Molecular Biology), Biol 314 (Cell Biology), Biol 428 (SEM Workshop) or Chem 365 (Biochemistry) will be given preference. Consent of instructor ([ssepsenw@uwsp.edu](mailto:ssepsenw@uwsp.edu))

**Description:** Our recently-installed Hitachi H-7500 transmission electron microscope (TEM) can create clear images at over **600,000X** magnification. This is more than **400 times higher** than the best light microscope -- good enough to see individual molecular structures in viruses and bacteria. In this new Workshop, students will learn how to prepare viruses and bacteria (some their own) for TEM using a rapid technique called *negative staining*. Students will learn how to use the TEM and its digital camera system to look at their own preparations, as well as pre-prepared tissue sections. Following training sessions, the class will break up into 2-person tutorial teams to practice their TEM and camera skills on their own preparations. After this Workshop, students will have the option of using their training to pursue research projects with other Biology faculty members.

### TENTATIVE WORKSHOP SCHEDULE

**Friday afternoon, Nov. 1:** preparation of viral and bacterial suspensions, glow-discharging carbon-coated grids for the TEM. Demos of tissue sectioning for TEM.

**Saturday, Nov. 2:** training in the alignment and use of the Hitachi TEM, training in the use of the AMT digital capture system. Practice sessions.

**Sunday, Nov. 3:** Creating Photo Albums in PowerPoint of TEM images for class presentation. Two 4-hour team tutorials (2 students, 2 hrs ea student) with student-prepared material and sectioned material.

**Tuesday-Thursday, Nov. 5-7:** independently-scheduled 4-hour team tutorials (2 students, 2 hrs ea student) with student-prepared material and sectioned material.

**Class presentation:** TBS during the week of 18-21 November: one evening presentation by Workshop students. Afterwards, some Biology faculty may offer brief descriptions of their research projects that involve TEM that students might be interested in.