**Experimental Videos**

**Videos From Magnus Hummelgard, many experimental details**

<https://www.youtube.com/watch?v=zkr3JmhjKbg> TEM demo (useful) <https://www.youtube.com/watch?v=EozF4hxl5oU> General TEM

<https://www.youtube.com/watch?v=iiJuG636PfQ> Electron Diffraction

<https://www.youtube.com/watch?v=_q7wKmV9-7c> SEM demo (useful)

**SEM Videos**

<https://www.youtube.com/watch?v=ljTEG-B-kGc> SEM, fairly low level

<https://www.youtube.com/watch?v=GY9lfO-tVfE> SEM, general

<https://www.youtube.com/watch?v=PmfjYkKeVEA> Good hardware overview, SEM and TEM

<https://www.youtube.com/watch?v=_q7wKmV9-7c> SEM demo (useful)

<https://www.youtube.com/watch?v=c7EVTnVHN-s> Series of 6 on SEM

**Virtual SEM**

[http://virtual.itg.uiuc.edu/](https://urldefense.com/v3/__http:/virtual.itg.uiuc.edu/__;!!Dq0X2DkFhyF93HkjWTBQKhk!Cw0-VeF15KarK-TOUrC8KUbliqKtvh_bV4KS2XZxxIPiZodkWMSSgna_007cw3Q3NqI73w$" \t "_blank)

[http://myscope-explore.org/virtualSEM.html](https://urldefense.com/v3/__http:/myscope-explore.org/virtualSEM.html__;!!Dq0X2DkFhyF93HkjWTBQKhk!Cw0-VeF15KarK-TOUrC8KUbliqKtvh_bV4KS2XZxxIPiZodkWMSSgna_007cw3RzWzOFfA$)

<https://micro.magnet.fsu.edu/primer/java/electronmicroscopy/magnify1/index.html>

<http://myscope-explore.org/virtualSEM.html>

<https://wecanfigurethisout.org/VL/SEM.htm>

<http://www.virtualsem.com/demo.php>

**Virtual TEM**

Virtual TEM for Materials research (a bit tricky to use):

[https://myscope.training/legacy/tem/practice/virtualtem/advanced.php](https://urldefense.com/v3/__https:/myscope.training/legacy/tem/practice/virtualtem/advanced.php__;!!Dq0X2DkFhyF93HkjWTBQKhk!AJfvfygwpmwQDVBXCeVq04dEn2n8Y5ZF2I3BvAPLqK2h3sKqyVsu6jJkmkKQdvyu7z_trQ$)

TEM and STEM tutorials by John Rodenburg, practical step-by-step guidelines on what do you need to know and what to expect before a TEM session:

[http://www.rodenburg.org/guide/index.html](https://urldefense.com/v3/__http:/www.rodenburg.org/guide/index.html__;!!Dq0X2DkFhyF93HkjWTBQKhk!AJfvfygwpmwQDVBXCeVq04dEn2n8Y5ZF2I3BvAPLqK2h3sKqyVsu6jJkmkKQdvxV2zzgOQ$)

Digital Microscope plug-in that simulates a TEM: [http://temdm.com/web/plugins/](https://urldefense.com/v3/__http:/temdm.com/web/plugins/__;!!Dq0X2DkFhyF93HkjWTBQKhk!BuTZULbl2V-10lqBmnvQ_MneC3lHVJ8fDDaJ6BfElxb2gulRf0w7hVR-vtyOTfpMlHBoZw$)

Introduction [https://myscope.training/legacy/tem/introduction/](https://urldefense.com/v3/__https:/myscope.training/legacy/tem/introduction/__;!!Dq0X2DkFhyF93HkjWTBQKhk!AJfvfygwpmwQDVBXCeVq04dEn2n8Y5ZF2I3BvAPLqK2h3sKqyVsu6jJkmkKQdvwjfS7mlQ$)

A number of interactive diagrams of TEM [https://www.doitpoms.ac.uk/tlplib/tem/index.php](https://urldefense.com/v3/__https:/www.doitpoms.ac.uk/tlplib/tem/index.php__;!!Dq0X2DkFhyF93HkjWTBQKhk!EcmCUqaTECiuKExaLR3_3LGGXyPcMMVH-lweqw0sPmZ9885GBqjqJdgwKqCD7OlTxPbxaA$)

A set of visualizations from the University of Liverpool

<http://www.materials.ac.uk/elearning/matter/IntroductionToElectronMicroscopes/TEM/index.html>

**A set of demonstration videos for a Tecnai 20 microscope that focus on operation procedures.**

Sample loading:  
[https://www.youtube.com/watch?v=A4CN5yBRGC8\_\_;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew\_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypePp0-D5Q$](https://urldefense.com/v3/__https:/www.youtube.com/watch?v=A4CN5yBRGC8__;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypePp0-D5Q$)  
  
Basic operation:  
[https://www.youtube.com/watch?v=noE\_F1o1XmA\_\_;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew\_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypdf8CMj8w$](https://urldefense.com/v3/__https:/www.youtube.com/watch?v=noE_F1o1XmA__;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypdf8CMj8w$)  
  
Low Magnification mode  
[https://www.youtube.com/watch?v=5SuZ26OYtfg\_\_;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew\_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypeVnXMd-A$](https://urldefense.com/v3/__https:/www.youtube.com/watch?v=5SuZ26OYtfg__;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypeVnXMd-A$)  
  
Diffraction:  
[https://www.youtube.com/watch?v=UgGYL0w\_m1k\_\_;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew\_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypcwsAB8Gw$](https://urldefense.com/v3/__https:/www.youtube.com/watch?v=UgGYL0w_m1k__;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypcwsAB8Gw$)  
  
CBED:  
[https://www.youtube.com/watch?v=DofabqzZcG8\_\_;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew\_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypdIjMNBqg$](https://urldefense.com/v3/__https:/www.youtube.com/watch?v=DofabqzZcG8__;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypdIjMNBqg$)  
  
HREM  
[https://www.youtube.com/watch?v=2Q5omtqgins\_\_;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew\_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypemZdSibQ$](https://urldefense.com/v3/__https:/www.youtube.com/watch?v=2Q5omtqgins__;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypemZdSibQ$)  
  
EDX Spectrum imaging:  
[https://www.youtube.com/watch?v=\_s\_6NYYI0kI\_\_;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew\_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypebW3i2wg$](https://urldefense.com/v3/__https:/www.youtube.com/watch?v=_s_6NYYI0kI__;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypebW3i2wg$)  
  
STEM  
[https://www.youtube.com/watch?v=JtVmDOa--gg\_\_;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew\_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypfFkFk4QQ$](https://urldefense.com/v3/__https:/www.youtube.com/watch?v=JtVmDOa--gg__;!!Dq0X2DkFhyF93HkjWTBQKhk!EME-maN06ew_9KtyyjsERuOndP5w-SOH7EiuvE6wDW3yQXFcFcAr4fZP8Uv9ypfFkFk4QQ$)

**On-Line Classes or Lectures**

Eric Stach’s introduction to TEM course:

[https://nanohub.org/resources/3777](https://urldefense.com/v3/__https:/nanohub.org/resources/3777__;!!Dq0X2DkFhyF93HkjWTBQKhk!AJfvfygwpmwQDVBXCeVq04dEn2n8Y5ZF2I3BvAPLqK2h3sKqyVsu6jJkmkKQdvwrlCj2oA$)

Eric Stach’s advanced TEM course- A more comprehensive TEM course that is targeting atomic HRTEM and STEM (functional oxide project), and analytical TEM including EELS (colorTEM project).

[https://nanohub.org/resources/4092](https://urldefense.com/v3/__https:/nanohub.org/resources/4092__;!!Dq0X2DkFhyF93HkjWTBQKhk!AJfvfygwpmwQDVBXCeVq04dEn2n8Y5ZF2I3BvAPLqK2h3sKqyVsu6jJkmkKQdvzYCHvbbQ$)

Coursera class "Transmission electron microscopy for materials sciences"

[https://www.coursera.org/learn/microscopy/home/welcome](https://urldefense.com/v3/__https:/www.coursera.org/learn/microscopy/home/welcome__;!!Dq0X2DkFhyF93HkjWTBQKhk!B9zXD6tHOMEWP9J0DQvQBwerhIASQjzn4lydB5NVF4-E0-J-8YKIlxCjenIaqXhLcfoPaA$)

Lectures from the 2017 Summer School on Electron Microscopy <https://www.paradim.org/cu_ss_2017>

**Visualization Tools**

<https://www.youtube.com/watch?v=spUNpyF58BY> Video on Fourier Transform