Hello students, I am Pratibha Prabhugaonkar from Dhempe college of Arts and Science. Today we will be studying the techniques in cell biology. The module is micrometry. In this module we are going to introduce the topic Micrometry, we will study the principle of micrometry and we are going to discuss the stage micrometer and ocular micrometer. At the end of this session we will be able to state the principle of micrometry and explain the ocular and stage micrometer used in the micrometry. What is micrometric or how you will define the term micrometry. All of you must have observed some organism or some objects under the microscope. As we measure the size of any objects in terms of length, breadth, etc. Sometimes it is necessary to measure the size of the microscopic organisms for their identification process. And these measurements are done by using a technique known as micrometry. The term micrometry comes from 2 words micro meaning microscopic. That is, the organisms which are visible only under the microscope and the metry meaning the measurements. So Micrometry is the measurement of dimensions of microscopic objects under a microscope. Micrometry works on a simple principle. That is if we know the size of the known scale, the size of the unknown can be measured. To put in simple terms to know the unknown scale, we need to measure it with known scale. For example how we use the measuring tape or the scale to know the size of any object. So under the microscope these measurements are done by using micro scales which are known as micro meters. There are two types of micrometers, ocular micrometer and stage micrometer. Now both these micrometers have microscopic graduations etched on their surfaces.

In this technique we use the stage micrometer whose size is known to calibrate the ocular micrometer. This ocular micrometer is later used to measure the size of the various objects. Why do we need to calibrate the microscope. Calibration of the microscope ensure that when the same sample is observed with a different microscope, will we get the same results. As two identical microscopes may also have slightly different magnification factors. The scale on the ocular micrometer does not have the

standard units of measure and the values change at different magnifications. And this is another reason why we need to calibrate the microscope. The distance between the etched lines on the ocular micrometer depends upon the objective lens used to view the specimen and in order to determine the precise distance between these two lines of the ocular micrometer, it must be calibrated with the stage micrometer. So the micrometry involves 2 microscales, which are known as micrometers, one is ocular

micrometer and another one is stage micrometer. This is an ocular micrometer. You can see it is a circular glass, discs etched with hundred graduations on their surface. The divisions are equally spaced. These divisions are equally spaced and they are marked as zero 10, 20 up to 100. The distance between these graduations varies depending upon the objectives being used and this ocular micrometer is placed inside the eyepiece of the microscope. The next is a stage micrometer. This is a stage micrometer. You can

see it is a glass slide on which the scale of the known interval is marked. The stage micrometer has hundred graduations and these 100 graduations equals to 1millimeter. Now since the stage is divided into100 graduations, each graduation is 1 / 100 which is equal to 0.01 millimeter. So the distance between the two lines on the stage micrometer is 0.01millimeter. This is also known as the list count of the stage micrometer. So all of you must have used the microscope. This is a typical light microscope. We can see here the different parts of the light microscope. This is the light source from where the light is emitted and it falls on the object which is placed on this stage. This is the stage of the microscope. Then we have the objectives which are used for the magnification. There are four different objectives 4x, 10x,

40x and 100x, and here we have the eyepiece which is used to observe the specimen, and these are the fine and coarse adjustment. The stage micrometer is placed on the stage of the microscope and the ocular micro micrometer is inserted into the eyepiece. Now there are certain eyepieces which has the ocular micrometer inserted within it or the ocular micrometer is already fitted into the eyepiece. These are the references which I used while preparing this PPT.

Thank you.