



**B. Sc. (Zoology) Semester -VI**

**Paper – II**

**(Applied Zoology- II Biotechniques, Microtechnique, Biotechnology, Bioinformatics and Biostatistics)**

**Unit: 1**

Sterilization by Filtration

<https://www.youtube.com/watch?v=vSKnjbOfzfQ&pp=ygUgc3RlcmlsaXphdGlvbiBmaWx0cmF0aW9uIG1ldGhvZCA%3D>

Sterilization by Filtration

<https://www.youtube.com/watch?v=uY9nJ8X0YFE&pp=ygUjYXV0b2NsYXZpbmcgbWV0aG9kIG9mIHN0ZXJpbG16YXRpb24%3D>

Sterilization dry heat sterilization

<https://youtu.be/stvOgtPD1hs?si=Ji1jGMGMHp9b7XQ7>

Sterilization wet sterilization

<https://youtu.be/WbqQ5mGgAgQ?si=nsMr6Kd0R7B5qLR9>

sterilization by radiation method

<https://www.youtube.com/watch?v=M53ggboAl2I&pp=ygUic3RlcmlsaXphdGlvbiBieSBYWRpYXRpb24gbWV0aG9kIA%3D%3D>

Separation of biomolecules: Centrifugation

[https://www.youtube.com/watch?v=ujm\\_5GoI8jA&pp=ygUqU2VwYXJhdGlvbiBvZiBiaW9tb2x1Y3VsZXM6IENIbnRyaWZlZ2F0aW9u](https://www.youtube.com/watch?v=ujm_5GoI8jA&pp=ygUqU2VwYXJhdGlvbiBvZiBiaW9tb2x1Y3VsZXM6IENIbnRyaWZlZ2F0aW9u)

Chromatography: thin-layer chromatography (tlc)

<https://www.youtube.com/watch?v=ltT8vr5Wmz8&pp=ygUuY2hyb21hdG9ncmFwaHkgdGhpb1sYXllciBjaHJvbWF0b2dyYXB0eSAodGxjKQ%3D%3D>

Chromatography:Gel Filtration

<https://www.youtube.com/watch?v=qrUaZWUM9uw&pp=ygUdY2hyb21hdG9ncmFwaHkgZ2VsIGZpbHRyYXRpb24%3D>

Chromatography:Ion exchange

<https://www.youtube.com/watch?v=8Q0VflbhEmM&pp=ygUbY2hyb21hdG9ncmFwaHkgYW9uIGV4Y2hhbmdl>

Agarose Gel Electrophoresis

<https://www.youtube.com/watch?v=FNcxKe-P-aU&pp=ygU2RWx1Y3Ryb3Bob3Jlc2l2OiBBZ2Fyb3NIIGdlbCBibGVjdHJvcGhvcmVzaXMsIFNEUy1QQUdF>

SDS-Polyacrylamide Gel Electrophoresis (SDS-PAGE)

<https://www.youtube.com/watch?v=S7NikBy38To&pp=ygU2RWx1Y3Ryb3Bob3Jlc2l2OiBBZ2Fyb3NIIGdlbCBibGVjdHJvcGhvcmVzaXMsIFNEUy1QQUdF>

Principle of colorimeter

<https://www.youtube.com/watch?v=Kh21fr3-W9s&pp=ygUvcHJpbmNpcGx1IG9mIGNvbG9yaW1ldGVyIGFuZCBzcGVjdHJvcGhvdG9tZXRLciA%3D>

<https://www.youtube.com/watch?v=6GkjZzzcaYc&pp=ygUvcHJpbmNpcGx1IG9mIGNvbG9yaW1ldGVyIGFuZCBzcGVjdHJvcGhvdG9tZXRLciA%3D>



Spectrophotometer

<https://youtu.be/6R6OCpuK4nQ?si=hF6GQrP8FbTCqV-Z>

**Unit: 2**

Microtechnique

<https://www.youtube.com/watch?v=Mo0vFM920fQ>

Difficulties encountered during section cutting (causes and remedies)

<https://www.youtube.com/watch?v=kBJH9M7Ka9E&pp=ygUjZGlmZmljdWx0aWVzIGR1cmLuZyBzZWNoaW9uIGN1dHRpbmc%3D>

Hematoxylin & Eosin Staining Procedure, Principle

[https://www.youtube.com/watch?v=J9Ixve9sR\\_k](https://www.youtube.com/watch?v=J9Ixve9sR_k)

Histochemical staining techniques for carbohydrates

[https://www.youtube.com/watch?v=E\\_nGgG\\_T27k&pp=ygUzSGlzdG9jaGVtaWNhbCBzdGFpbmluZyB0ZWNoZmlxdWVzIGZvcjBjYXJib2h5ZlJhdGVz](https://www.youtube.com/watch?v=E_nGgG_T27k&pp=ygUzSGlzdG9jaGVtaWNhbCBzdGFpbmluZyB0ZWNoZmlxdWVzIGZvcjBjYXJib2h5ZlJhdGVz)

Histochemical staining techniques for Proteins and Lipids

<https://www.youtube.com/watch?v=5hv5ehOQyDU&pp=ygUvSGlzdG9jaGVtaWNhbCBzdGFpbmluZyB0ZWNoZmlxdWVzIGZvcjB0cm90ZWlucyA%3D>

**Unit: 3**

Recombinant DNA technology

<https://www.youtube.com/watch?v=fzB7tOww4xk&pp=ygUacmVjb21iaW5hbnQgZG5hIHRlY2hub2xvZ3k%3D>

Gene isolation by shotgun method

<https://www.youtube.com/watch?v=23iCH3mmifU&pp=ygUdZ2VuZSBpc29sYXRpb24gc2hvdGd1biBtZXRob2Q%3D>

<https://youtu.be/23iCH3mmifU?feature=shared>

Isolation of gene-

<https://www.youtube.com/watch?v=pgP6wvsi0rY&pp=ygURaXNvbGF0aW9uIG9mIGdlbmU%3D>

DNA manipulation enzymes

[https://www.youtube.com/watch?v=l7UJ\\_-FnHa4&pp=ygUYRE5BIG1hbmlwdWxhdGlvbiBlbnp5bWVz](https://www.youtube.com/watch?v=l7UJ_-FnHa4&pp=ygUYRE5BIG1hbmlwdWxhdGlvbiBlbnp5bWVz)  
<https://youtu.be/pedGFzMy4bE?feature=shared>

Basic concepts of cloning vectors and splicing

[https://www.youtube.com/watch?v=VXkw\\_U6mJpc&pp=ygUxLjMgQmFzaWMgY29uY2VwdHMgb2YgY2xvbmmluZyB2ZWNo0b3JzIGFuZCBzcGxpY2luZw%3D%3D](https://www.youtube.com/watch?v=VXkw_U6mJpc&pp=ygUxLjMgQmFzaWMgY29uY2VwdHMgb2YgY2xvbmmluZyB2ZWNo0b3JzIGFuZCBzcGxpY2luZw%3D%3D)

Cloning Vectors - Biotechnology Principles and Processes

<https://youtu.be/2tibTiBstG4?feature=shared>

Insertion of DNA and ligation using blunt ends, cohesive ends, Cloning vectors

<https://www.youtube.com/watch?v=MifDx417SDs&pp=ygVUbmMcG0iBJbnNlcnRpb24gb2YgRE5BIGFuZCBsaWdhGlvbiBlc2luZyAgYmx1bnQgZW5kcywgY29oZXNpdmUgZW5kcywgQ2xvbmmluZyB2ZWNo0b3Jz>



Application of biotechnology: Insulin production

<https://www.youtube.com/watch?v=5A3K6aCwbCU&pp=ygU-LiBBcHBsaWNhdGlvb24%3D>  
<https://www.youtube.com/watch?v=5A3K6aCwbCU&pp=ygU-LiBBcHBsaWNhdGlvb24%3D>

Human Insulin Formation

<https://youtu.be/1MNn1A70bGs?feature=shared>

Application of biotechnology: vaccine production

<https://www.youtube.com/watch?v=DgDDw2gQJx0&pp=ygUwQXBwbGljYXRpb24gb2YgYmlvdGVjaG5vbG9neTogdmFjY2luZSBwcm9kdWN0aW9u>

#### **Unit: 4**

Bioinformatics

<https://www.youtube.com/watch?v=7j3atzpjh2c&pp=ygUOYmlvaW5mb3JtYXRpY3M%3D>

<https://www.youtube.com/watch?v=W-Ov2cUaYQY>

Bioinformatics databases-

<https://www.youtube.com/watch?v=JmKD5SnQtFE&pp=ygUYmlvaW5mb3JtYXRpY3MgZGF0YWJhc2Vz>

<https://www.youtube.com/watch?v=-wIFNr2FDHc&pp=ygUYmlvaW5mb3JtYXRpY3MgZGF0YWJhc2Vz>

<https://www.youtube.com/watch?v=JmKD5SnQtFE>

<https://www.youtube.com/watch?v=JmKD5SnQtFE>

Nucleotide sequence databases (Protein and nucleotide)

[https://www.youtube.com/watch?v=4\\_eU6A1-HTk&pp=ygUdTnVjbGVvdGlkZSBzZXZlZS5jZSBkYXRhYmFzZXM%3D](https://www.youtube.com/watch?v=4_eU6A1-HTk&pp=ygUdTnVjbGVvdGlkZSBzZXZlZS5jZSBkYXRhYmFzZXM%3D)

[https://www.youtube.com/watch?v=4\\_eU6A1-HTk&pp=ygUdTnVjbGVvdGlkZSBzZXZlZS5jZSBkYXRhYmFzZXM%3D](https://www.youtube.com/watch?v=4_eU6A1-HTk&pp=ygUdTnVjbGVvdGlkZSBzZXZlZS5jZSBkYXRhYmFzZXM%3D)

<https://youtu.be/89zBJ7RQe1U?feature=shared>

Biostatistics

[https://www.youtube.com/watch?v=1Q6\\_LRZwZrc&pp=ygUNQmlvc3RhdGlzdGljcw%3D%3D](https://www.youtube.com/watch?v=1Q6_LRZwZrc&pp=ygUNQmlvc3RhdGlzdGljcw%3D%3D)

<https://youtu.be/tXIS0N0I9xU?feature=shared>

Tabulation of data

<https://www.youtube.com/watch?v=IM6O5jJQosY&pp=ygUSVGFidWxhdGlvb24%3D>

Presentation of data

<https://www.youtube.com/watch?v=vKEgGf7cROM&pp=ygUUCm9mZS5jZSBkYXRhYmFzZXM%3D>

Sampling errors

<https://www.youtube.com/watch?v=Mg0EASrWl-Y&pp=ygUPc2FtcGxpbnmcgZXJyb3Jz>

<https://www.youtube.com/watch?v=uGuWrPFStdg&pp=ygUPc2FtcGxpbnmcgZXJyb3Jz>

Mean Median and Mode

<https://www.youtube.com/watch?v=B1HEzNTGeZ4&pp=ygUQbWVhbiBtZWRpYW4gbW9kZQ%3D%3D>

Probability

<https://www.youtube.com/watch?v=KzfWUEJjG18&pp=ygULcHJvYmFiaWxpdk%3D>



Standard error and standard deviation

<https://www.youtube.com/watch?v=179ce7ZzFA8&pp=ygUlc3RhbmRhemQgZXJyb3IgaWYw5kIHN0YW5kYXJkIGRldmlhdGlvbg%3D%3D>