



B. Sc. (Botany) SEMESTER-IV

Paper-I

(Cell Biology, Plant Breeding, Evolution and Seed Technology)

UNIT-I

Cell organization:

1. **Cell:** Brief account of Cell theory

https://youtu.be/70Q_skN5kOw?si=FocPtZvqHKOO0g-P

Comparison between Prokaryotic and Eukaryotic cell organization

https://youtu.be/u2DoxvLCqDI?si=1n_D5HHX0qabkj1j

Structure of typical plant cell.

<https://youtu.be/HUN7Rrap2Jc?si=DO5kz3dCpcCBF6Lu>

2. **Structure and functions of:** Cell wall

<https://youtu.be/2jpMbUovBmU?si=4PwuG2iYLiW05pgs>

Plasma membrane (Fluid Mosaic model)

<https://youtu.be/qVIL8Drn7fs?si=LPvRamXrOPIAWgtJ>

Endoplasmic reticulum

<https://youtu.be/v2FNaJGMDbo?si=grA2aLBiZYILC5E8>

Golgi complex

<https://youtu.be/6CbsOSH7aCA?si=F2js7dSh-TBUChcE>

Ribosomes

<https://youtu.be/5iYFFE11G-s?si=rAPAzCG1K8XDnoS4>

and Vacuole

https://youtu.be/nUfjz7CPP9E?si=azxF0_rkAN2Fmo

UNIT-II

Cell biology:

1. **Structure and functions of:** Chloroplast

<https://youtu.be/YH4oAdCdrbM?si=wRUh1YajzLo1lobN>

Mitochondria



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<https://youtu.be/arf4lhAmWAA?si=K9oYqEFvAszWQvKE> and

Nucleus

<https://youtu.be/mCCCTIi-ODw?si=ScDIJseC9f7BSD2L>

2. **Chromosome morphology:** Chromatid, chromomeres, centromere, telomere, secondary constriction, satellite.

https://youtu.be/JRSpMNsOmeA?si=5zlQAemrg00aw_5R

3. **Molecular organization of chromosome:** Nucleosome model.

<https://youtu.be/McuLbMuC1zs?si=AGDGFOWfSkoQJ2Hn>

4. **Sex Chromosomes:** Definition

https://youtu.be/cF_JuCBICtC?si=2fNIId6xfPHK3zTE8

Structure of sex chromosomes (X and Y) in Melandrium plant.

<https://youtu.be/Vadj3bv69jM?si=acBdQ2a4eYc494-B>

5. **Cell division:** Mitosis

<https://youtu.be/fJubkfjgoQk?si=iA6cGd8yu16DcJJ->

and Meiosis (Mechanism and significance)

<https://youtu.be/WpVe9t9CxxvY?si=gePJ2FmIXITBRKsY>

UNIT-III

Plant breeding and Evolution:

1. **Plant Breeding:** Definition and objectives

<https://youtu.be/39HrWsSD44k?si=ISbDWQ3QKFz3gekh>

2. **Methods of Plant breeding:** Definition; Procedure or technique of Pure line selection,

<https://youtu.be/oNY2kVjETXk?si=88iHpz-POQ4zn9Yc>

Clonal selection

https://youtu.be/x_P4D727waE?si=C9Cy7eVHusEti1tx

Hybridization

<https://youtu.be/QmoE4oVcenU?si=JHMrXzFH38ZE1WLO>

Heterosis (Definition and Scope)

https://youtu.be/8SUqObIE17E?si=CiWCb_WHucUNgTie

3. **Biostatistics:** Mean Median, Mode

<https://youtu.be/keLk7odKCsE?si=NkZ3ZndKETqx3MBK>

Standard deviation



<https://youtu.be/D9xfxOzOwrQ?si=ghA5fi0xxDAontcU>

and Standard error

<https://youtu.be/KRsWk5EImB8?si=ipAUksVwFZirtEiP>

4. **Evolution:** Neo-Darwinism

<https://youtu.be/t6ukqIYdIxs?si=KrxEczn0RLF63qul>

and Miller's theory

<https://youtu.be/HqFYg2QHEVY?si=vmHgZfV12aZqDvdP>

UNIT-IV

Skill Development: Seed Technology:

1. **Seed:** Structure and types

https://youtu.be/gaATd85VLQQ?si=me_Pl6lP0cOY0pEu

2. **Seed dormancy:** Causes of seed dormancy, methods to break seed dormancy

<https://youtu.be/XLHFdT8rIcc?si=hVgPbN6rPAKkqYRW>

3. **Seed technology:** Seed storage

https://youtu.be/a_usEtDQzZI?si=9I2rjnh1cuJlfnUj

seed banks

https://youtu.be/B5DWhx_mDRY?si=xQCGgDtbwqcatdv-

factors affecting seed viability

<https://youtu.be/io9Ky8FFvVw?si=pUSXFz05dxSMYngC>

genetic erosion

<https://youtu.be/-MEhqxgNp-g?si=1G9rBz8LTnu-CGlw>

and methods of seed production

<https://youtu.be/PI6SUD1CLJE?si=rESp-6XEpc3sMRGu>

seed testing

<https://youtu.be/YmpnlJ6Lu20?si=cfuuw96YW7aINQQ5>

and certification

<https://youtu.be/x79bfSsuKQo?si=b6nkW3PNVKVvFqPS>

4. **Commercial types of seeds:** Farmers seed, foundation seeds, breeders seed and certified seed.



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https://youtu.be/fUTr_G1aQ_c?si=qCUslOm61KU2dnC9