# . Course Objectives and Learning Outcomes

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| 1. Course Main Objective |
| * **To learn the Chromosomal theory of Genetics**
* **To learn the phenomenon of Linkage and Crossing over and Genetic Maps.**
* **To learn the Chromosomal structure and Karyotype**
* **To learn the Chromosome behavior during cell divisions**
* **To learn the Numerical and Structural Chromosomal changes.**
* **To identify the chromosomal mapping and illustrate the importance of Chromosome banding**
* **To acquire the skills of Chromosome banding techniques**
* **To define the In-situ hybridization, GISH and FISH techniques**
* **To acquire the skills of treating with the problems and training concerning the course.**
* **To acquire some skills concerning presentation, dialogue and discussion**
* **Knowledge of the applied aspects of plant surfaces, their role in reproduction and propagation, their benefits as natural habitats of microorganisms, and sources of some natural economic materials.**
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# C. Course Content

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| **No** | **List of Topics** | **Contact Hours** |
| 1 | **Chromosomal structure and Karyotype** | **6** |
| 2 | **Heterochromatin banding** | **2** |
| 3 | **DNA organization in the chromosome** | **2** |
| 4 | **Mid-term1** | **2** |
| 5 | **Chromosome mapping** | **2** |
| 6 | **Linkage and Crossing over** | **2** |
| 7 | **chromosome behavior and abberrations** | **8** |
| 8 | **Cytological and Molecular basis of Linkage and Crossing ove** | **2** |
| 9 | **In-situ hybridization, GISH and FISH** | **2** |
| 10 | **Mid-term2** | **2** |

## Assessment Tasks for Students

| **#** | **Assessment task\*** | **Percentage of Total Assessment Score** |
| --- | --- | --- |
| **1** | **Mid term**  | **15%** |
| **2** | **Presentation/ essay****Reports and assignments** | **15%** |
| **3** |
| **4** |
| **5** | **Practical**  | **10%** |
| **6** | **Final Practical Exam** | **20%** |
| **7** | **Final Exam** | **40%** |

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| **Required Textbooks** | **Russell, P.J. (2002). i Genetics. pp 828. Benjamin Cummings, San Francisco**  |
| **Essential Reference Materials** | 1. **Cytogenetics.M.A.M.(2009)**
2. **Journals of Botany**
3. **Journals Genetics**
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| **Electronic Materials** | **Web sites and blackboards** |
| **Other Learning Materials** | Web Sites, Facebook, Twitter, etc.  |

## Learning Resources