**GENOMICS CREDIT HOURS 2+1**

**LEARNING OUTCOMES:**

**Students will be able to:**

1. Define organization and structure of genomes.
2. Distinguish between genetic and physical maps.
3. Describe the different techniques used for sequencing a genome.

**COURSE CONTENTS:**

Organization and structure of genomes; genome sequencing genetic mapping (RFLP, microsatellite, SNP) high resolution physical mapping (STS, EST); comparative genomics and genome evolution, hierarchical and whole genome shotgun sequencing; DNA sequencing strategies, Manual and automated sequencing, different platforms used for next generation sequencing sequence assembly, obstacles and solutions; estimating gene number overprediction and underprediction, homology searches, exon prediction programs, integrated gene finding software packages; structural variation in the genome and its applications, DNA microarray.

**PRACTICAL:**

1. *In silico* analysis and comparison of different genomes

**RECOMMENDED BOOKS:**

1. Field, D., & Davies, N. 2015. Biocode: The new age of genomics. Oxford University Press
2. Kulkarni, S., & In Pfeifer, J. D. 2015. Clinical genomics. Amsterdam: Elsevier/Academic Press
3. Pevsner, J. 2015. Bioinformatics and functional genomics.3rd Edition. John Willey and Sons, New Jersey.
4. Zayed,A., 2016.Genomics. Elsevier science