

Ref: No. Y/REG/ACA/38-ACM/2020

14.05.2020

**NOTIFICATION – 38-ACM/10/2020 dtd. 14.05.2020**

Sub: Revision in the curriculum of P.G. Diploma in Multiomics  
Ref: Resolution of the Academic council at its 38<sup>th</sup> meeting held on  
27.04.2020, vide agenda - 21

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The Academic Council at its 38<sup>th</sup> meeting held on 27.04.2020 and subsequently the Board of Management at its 49<sup>th</sup> meeting held on 30.04.2020 have resolved to approve the revision in the curriculum of P.G. Diploma in Multiomics as follows:-

**Course Name:** Proteomics and Metabolomics

Unit	Existing Contents	Revision (%)
Unit 1	<b>Proteomics:</b> Mass spectrometry – ionization methods (MALDI, electrospray), mass analysers, fragmentation modes (CID, HCD and ETD), intact protein analysis, protease digestion, peptide mass fingerprinting, tandem mass spectrometry, , introduction to Data Independent Analysis (DIA), Basics of chromatography and fractionation strategies; Protein sequence and spectral databases/ libraries, <i>de-novo</i> sequencing, search algorithms- SEQUEST, X!tandem, MS-Amanda; Proteomic data repositories <b><u>Introduction to proteogenomics: Concepts and principles of genome annotation</u></b>	The underlined topic is added from unit 3 (5%)
Unit 3	<b>Proteogenomics :</b> <u>Concepts and principles of genome annotation, genome search specific peptides, alternative translation initiation, small ORFs, Analysis of transcriptomic and proteomic data for genome annotation; Gene prediction algorithms</u>	This unit is removed as the topics are not relevant to PG diploma level (15%)
<b>Overall changes 10%</b>		

**Course Name:** Genomics and Epigenetics

Units	Existing Contents	Revision
Unit 1	<b>Genes and Genomes:</b> Gene- Eukaryotic and prokaryotic gene structure, genome databases, Coding regions (genes) and Non-coding regions ( <u>Intergenic sequences</u> ); Gene and related sequences – NTS, ETS and ITS, 3' UTR, 5' UTR, Pseudogenes; <u>Repeat sequences: a)</u> <u>Interspersed repeats: LINES, SINES, LTR elements; SINES types:</u>	The underlined topics are removed. These aspects are not important for industrial job (10%)

ATTESTED

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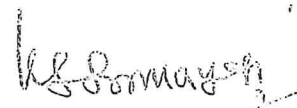
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	<u>ALU elements, MIR, MIR3; b) Tandem repeats: Transposons; c) Microsatellites; Genetic mapping; Physical mapping (Contig maps, Restriction maps, DNA sequence maps, FISH); Molecular markers for genome analysis-Restriction enzyme sites, EST, STS, microsatellites</u>	
<b>Unit 2:</b>	<b>Genomics:</b> Sanger sequencing-principle, methodology and applications, History of genome sequencing, Human Genome sequencing project; Analysis of gene expression- qPCR, northern blot, southern blot; Transcriptome profiling; DNA microarrays; <u>Copy number variation, sequence repeats, SNV, haplotype, and their relevance in diseases.</u> Comparative genomics. Metagenomics	The underlined topics are removed. These aspects are not important for the course and industrial job (5%)
<b>Overall changes 7%</b>		

**Course Name: Bioinformatics and Integrated OMICS Data analysis**

Unit No.	Existing Contents	Revision
Unit 3	<b>Fundamentals of programming Languages:</b>  a) PERL <u>Data structure: scalar, array, hash; Conditional statements: if, else, elsif, unless; Loops: for, foreach, until, while, do..While; String handling: length, lc, uc, substr and regular expression; Array handling: push, pop, shift, unshift; Operators; File handling; References; Subroutine. Bio-PERL.</u>  Python Introduction to python: Overview, Environment setup, Basic syntax; Basic operations; Data types: strings, tuples, lists, dictionaries; Decision making: if, if else, nested if; Loops: while, for, nested, break, continue and pass statement; File handling; Bio-python.	The underlined topics are removed. Python language has become more popular than Perl in the Industry as well as academia (10%)
Unit 4	<b>Biological Databases :</b> Databases and data retrieval systems (DBMS, SQL) – primary and secondary databases, biological databases – NCBI, UniProt, PDB, KEGG, <u>Data annotation strategies; Database development</u>	The underlined topics are removed. It is of higher level topic. (5%)
<b>Overall changes 7%</b>		

This notification has been issued for implementation with effect from the academic year 2020-21.



**REGISTRAR**  
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To,

The Dy. Director, YRC

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