No.	Information of the subject	
1.	Unit name:	Bioprocess Engineering I
2.	Code:	BioT21051
3.	Classification:	Core subject
4.	Credit value:	3.5
5.	Semester/Year Offered:	1/2
6.	Pre-requisite:	-
7.	Mode of delivery:	Presentations, Lectures, Discussion
8.	Assessment system and breakdown of marks:	Class work, Tutorials
	Practical	30%
	Mid-term exam	35%
	Final exam	35%
9.	Academic staff teaching unit:	Department of Biotechnology
10.	Course outcome of unit: After completion of this course, students will be able to 1. to study the basic principles and calculation techniques used in the field of chemical and bioprocess engineering 2. to explain process variables and their importance in real-world engineering problems 3. to explain the fundamentals of material balanceas applied to chemical and bioprocess engineering andsolve the material balance problems	
11.	Synopsis of unit: Biotechnology is an inter-disciplinary applied science and those scientists trained in molecular biology and cell manipulation shall fulfil only a part of complete picture of biotechnology. Bringing out the full benefits of biotechnology requires sustainable manufacturing capability involving large-scale processing of biological material. In that sense, this course will fill the gap of the engineering knowledge and practices which are becoming a norm in the current trend of biotechnology in Myanmar.	
12.	Topics 1. System of units 2. Conversion of units 3. Significant Figures 4. The Mole and Molecular weight 5. Density and Specific gravity 6. Temperature	

	7. Pressure and Hydrostatic head 8. Introduction to Material balance 9. General strategy for solving material balance problems
13.	Main reference: • David M. Himmelblau and James B.Riggs, "Basic Principles and Calculations in Chemical Engineering", 8th Edition. Prentice Hall International Series.
14.	Additional references: • Pauline M. Doran, "Bioprocess Engineering Principles", Academic Press, An Imprint of Elsevier • Richard M. Felder and Ronald W. Rousseau, " Elementary Principles of Chemical Processes", 3rd Edition, John Wiley and Sons, Inc.