| NATIONALLY HARMONISED B.Sc. CHEMICAL ENGINEERING PROGRAM | | | | |
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| Course Code | ChEg3114 | | | |
| Course Name | Mass transfer Unit Operations | | | |
| Degree Program | B.Sc. in Chemical Engineering | | | |
| Module Name | **Chemical Engineering Basics** | | | |
| Module Coordinator | N.N. | | | |
| Lecturer | N.N. | | | |
| Instructor's Contact Information | Office<br>Phone<br>Email<br>Office hour | | | |
| ECTS | 6 | | | |
| Student Work Load | Lecture | Tutorial | Laboratory or Practice | Home study |
| Weekly basis | **3** | **3** | **0** | **4** |
| Semester basis(total) | 48 | 48 | 0 | 64 |
| Mode of delivery | Parallel (per semester) | | | |
| Course Objectives & Competences to be Acquired | The course aims to introduce students to industrial unit operations based on basic principle of mass transfer kinetics and chemical equilibrium.<br><br>Up on the completion of the course, the students will<br>• understand the science behind industrial mass transfer operations<br>• analyze the equations used in designing mass transfer equipment<br>• determine the parameters to optimize performance of the equipment;<br>• determine the size of the equipment and optimum operating conditions. | | | |
| Course Description/Course Contents | 1. Introduction to mass transfer unit operations<br>2. Equilibrium controlled mass transfer operations<br>3. Classification of Mass Transfer Operations<br>3.1 Mass Transfer with Chemical Reactions<br>3.2 Mass Transfer Operations with Heat<br>4. Distillation | | | |

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| | 5. Absorption<br>6. Drying of Solids<br>6.1 Gas -Vapor mixtures (Psychrometry)<br>6.2 Psychrometric terms<br>6.3 Psychrometric chart<br>7. Crystallization<br>8. Extraction<br>9. Leaching<br>10. Adsorption<br>11. Ion Exchange |
| Pre-requisites | ChEg3113 (Thermal Unit Operations) |
| Semester | Year 3, Semester II |
| Status of Course | Compulsory |
| Teaching & Learning Methods | Classroom contact/Lecture, group work, interactive tutorial sessions (group and pair work/discussions) and individual work (independent learning). |
| Assessment/Evaluation | Continuous Assessment.....50%<br>• Assignments.....20%<br>• Quizzes.....15%<br>• Tests .....15%<br>Final exam.....50% |
| Course Policy | **Attendance**: As per harmonized academic policy<br>**Assessments**: students are supposed to handle all assessments on time.<br>**Cheating/plagiarism:** it is strictly forbidden and any misconduct is accountable per the students' code of conduct.<br>Also, please do not chew gum, eat, listen to recorders or CD players, wear sunglasses, or talk about personal problems. Please be sure to turn off pagers and cell phonesbefore class and exam sessions |
| Literature | **Text**<br>• R.E. Treybal : Mass Transfer Operations,<br>**Reference**<br>• J. D. Seader & E. J. Henley, Separation Process Principles, John Wiley & Sons, 1998.<br>• E. L. Cussler & A. Varma Diffusion : Mass Transfer in Fluid Systems, 2nd ed., CambridgeUniversity Press. |

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| | • McGraw & Hill C. J. Geankoplis, Transport Processes and Separation Process Principles: Includes Unit Operations, 4th ed., Prentice Hall PTR. |
| Approval Section | **Module coordinator/module team** |