

No	Information of Introduction to Reactor Engineering	
1	Unit name:	Introduction to Reactor Engineering
2	Code:	NE-4024
3	Classification:	Nuclear Reactor Engineering
4	Credit value:	3
5	Semester/ Year Offered:	2/4
6	Pre-requisite:	NE-3022 Introduction to Nuclear Concepts for Engineers
7	Mode of delivery:	Lecture, Classwork
8	Assessment system and breakdown of marks:	Assignment, tutorial, exam
	Assignment	10%
	Tutorial	20%
	Mid-term	35%
	Exam	35%
9	Academic staff teaching unit:	Department of Nuclear Technology
10	<p>Course outcome of unit: After completion of this course, students will be able to</p> <ol style="list-style-type: none"> 1. analyze interaction of radiation with matter 2. analyze nuclear fission 3. analyze nuclear reactor types and theory, and cost of nuclear power 4. analyze fundamentals of neutron moderation, which is treated in a simple way by the group diffusion method 5. analyze nuclear properties of moderators, reflector and fuel materials of a reactor 	
11	<p>Synopsis of unit: The design of all nuclear systems – reactors, radiation shields, isotopic generators, and so on – depends fundamentally on the way in which nuclear radiation interacts with matter. In this subject, these interactions are discussed for neutrons, r-rays, and various charged particles with energies up to about 20 MeV. Most of the radiation encountered in practical nuclear devices lies in this energy region. This subject includes information on atomic and nuclear physics; neutron characteristics; reactor theory and nuclear parameters; and the theory of reactor operation. This information will provide personnel with a foundation for understanding the scientific principles that are associated with various nuclear reactor facility operations and maintenance.</p>	
12	<p>Topic:</p> <ol style="list-style-type: none"> 1. Interaction of radiation with matters 2. Nuclear cross-sections 3. Neutron attenuations 4. Neutron flux 5. Neutron cross-section data 6. Nuclear fission 7. Fission Yields and Mass Distribution of Fission Products 8. Energy Release from Nuclear Fission 9. Energy Distribution of Fission Fragments 	

	<ol style="list-style-type: none">10. Energy Distribution of Fission Neutrons11. Neutron Yield and Production Ratio12. Prompt and Delayed Neutrons13. Liquid Drop Model for Nuclear Fission14. Spontaneous Fission15. Nuclear Reactors and Nuclear Power16. Nuclear Reactor Fuel17. Non-Nuclear Components of Nuclear Power Plants18. Components of Nuclear Reactors19. Power Reactors and Nuclear Reactors20. Nuclear Cycles21. Isotope Separation22. Fuel Reprocessing23. Radioactive Waste Disposal24. Reactor Materials25. Structural and Cladding Materials26. Moderator and Reflector Materials27. Fuel Materials
13	<p>Main references:</p> <ol style="list-style-type: none">1. Introduction to Nuclear Engineering, 3rd Edition, John R. Lamarsh and Anthony J. Baratta2. Elementary Nuclear and Reactor Physics, M.A. Wazed Miah3. Nuclear Reactor Engineering , Reactor Design Basic,4th Edi, Vol-1, Samuel Glasstone and Alexander Sesonske
14	<p>Additional references:</p>