

Value Added Course

Title: Nuclear data for science & technology

Unit:1 Nuclear Data Centers and Tools

15 hours

Nuclear Data Centers an Overview – Nuclear Data Measurements – Evaluation of Nuclear Data – Nuclear Data Categories – Nuclear Data Libraries – EXFOR – ENSDF – ENDF/B- 6 – EXFOR Coding Tools – EXFOR Editor – Digitization software – IAEA – NDS Tools for Nuclear Data – NDPCI EXFOR coding for Practical (Nuclear Structure), Exposure to GEF code

Unit:2 Nuclear Structure and Reaction

15 hours

Examples of Nuclear Structure Data: Isotopic masses – Nuclear Levels and Properties – Half-lives of radionuclides and isomers – Energies and Intensities of Gamma rays Examples of Nuclear Reaction Data: Cross-section for nuclear reactions induced by neutrons, photons, protons, and other charged particles including heavy ions, Nuclear fission: yields of fission-neutrons and fission products, related energy release – Neutron time of flight EXFOR coding for Practical (Nuclear Reactions), Exposure to EMPIRE and TALYS for simple reactions for practical.

Total Lecture hours

30 hours

Text Book(s)

1 Nuclear Reactor Physics, 2nd, Completely Revised and Enlarged Edition

Weston M. Stacey , ISBN: 978-3-527-40679-1,735 pages, May 2007

2 The Elements of Neutron Interaction Theory, Anthony Foderaro, MIT Press, ISBN: 9780262561600, March 2003

Reference Books

1 <https://www-nds.iaea.org/nrdc/>

2 <https://www-nds.iaea.org/nsdd/>

Scheme of Assessment

1. First Internal Assessment tests (for C1) will be conducted after 8th week of the semester comprising 50% of the syllabus.
2. Second Internal Assessment tests (for C2) will be conducted in the 16th week of the semester comprising remaining 50% of the syllabus.
3. The C1 and C2 Internal Assessment tests evaluation will be an aggregate of written test, assignments, seminar by the corresponding Course teacher/teachers.
4. A student will be eligible for C3 final examination, if he/she has scored a minimum of 30% which is the sum total of C1 test and C2 test.
6. C3 final examination will be conducted in 18th week of the Semester. .

The pattern of evaluation is provided below

Examination	Unit 1	Unit 2	Average score	Assignment	Seminar	Total Marks
C1	5	5	5	5	--	10
C2	5	5	5	--	5	10
C3	15	15				30