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Course number: 02/2025

NTEC N32 - Experimental Reactor Physics Course at VR-1 Reactor

February 3 – February 7, 2025

Monday February 3, 2025

Time	Activity
9:00 - 11:30	Welcome meeting & Visit of the VR-1 Reactor
11:30 - 12:30	Lunch
12:30 - 15:30	Neutron detection
	Neutron detection (helium and boron detectors) Study of linearity and non-linearity of neutron detection (helium and boron detectors)

Tuesday February 4, 2025

Time	Activity
9:00 - 12:00	Delayed neutrons detection
	Determination of delayed neutrons properties, analyses of delayed neutron decay curves Determination of fissionable material mass using delayed neutrons detection
12:00 - 13:00	Lunch
13:00 - 16:00	Neutron flux mapping
	Distribution of the neutron flux in the reactor Correction on non-linearity of neutron detectors



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Wednesday February 5, 2025

Time	Activity
9:00 - 12:00	Reactivity measurement
	Source Jerk method Rod Drop method Source multiplication method Positive period method
12:00 - 13:00	Lunch
13:00 - 16:00	Control rod calibration
	Control rod calibration by inverse rate method Control rod calibration by reactimeter

Thursday February 6, 2025

Time	Activity
9:00 - 12:00	Study of the reactor kinetics and dynamics
	Reactor behaviour in critical, supercritical and sub critical state with and without the external neutron source Influence temperature effects on behaviour and operation of nuclear reactor - determination of reactor void coefficient
12:00 - 13:00	Lunch
13:00 - 16:00	Critical experiment – approaching critical state
	Prediction of the reactor critical state by inverse rate method

Friday February 7, 2025

Time	Activity
9:00 - 12:00	Digital control and safety systems of the VR-1 reactor
	Demonstration of control system functions Training of VR-1 reactor control by students
12:00 - 13:00	Lunch
13:00 - 14:00	Test & Exit meeting
	Test, discussion and conclusions