

**“Selected issues of safety engineering and exploitation of nuclear power plants
in the context of EU energy policy”, 01-12.09.2013, Trnava, Slovakia**

Didactic program of intensive program

01.09.2013 (Sunday)

up to 18.00 – arrival to Trnava city;
18.00-19.00 - supper;
19.00-20.00 – opening ceremony of the School;

02.09.2013 (Monday)

8.00-8.45 - breakfast;
9.15-11.00 - lecture of Pavel Kolat **”Fundamentals of nuclear energy”** (e.g.: history of scientific research on natural radioactivity, physical basics of radioactivity, nuclear reactions, radio decay, types of radiations, basics of dosimetry);
11.15-13.00 – lecture of Pavel Kolat **”Nuclear power plants”** (e.g.: design and construction of nuclear reactors of the first type, basics of nuclear reactor utilization, thermal balance in different load states, different types of moderators);
13:00-14.00- dinner;
14.15-16.00 - lecture of Paweł Regucki **”Fuel and fuel pellet production”** (e.g.: fuel cycle, uranium isotopes, natural uranium, enriched uranium, types of nuclear fuels used in different nuclear power plants, safety procedures during transportation and storage of fresh and spent nuclear fuel);
16.15-18.00 – lecture of Andrzej Tatarek **”Storage and disposal of nuclear waste”** (e.g.: transportation and utilization of radioactive waste, safety procedures of medium and low radioactive waste storage)
18.00-19.00 - supper;
19.00 – walk around Trnava city;

03.09.2013 (Tuesday)

8.00-8.45 - breakfast;
9.15-11.00 - lecture of Pavel Kolat **”Advanced nuclear reactors of III & IV generation”**; (e.g.: construction and classification of IIIth and IVth generation nuclear reactors, theoretical basics of fusion, analysis of economical costs of building NPP);
11.15-13.00 - lecture of Karol Balog **”Safety aspect of products used in nuclear power plants (NPP)”** (e.g.: discussion of requirements concerning quality of materials and products used to construct and utilization of NPP and reactors, its utilization, storage and future potential recycling);
13:00-14.00- dinner;
14.15-16.00- lecture of Ivan Hrušovský **”Hazard and risk assessment in nuclear power plant (NPP) - safety procedures”** (e.g.: presentation of changes in safety procedures in NPP during last ten years, changes in legal control in NPP, special fire brigades in NPP);
16.15-18.00- lecture of Ivan Hrušovský **” Engineering tools used to risk assessment in NPP ”** (e.g.: review of modern engineering tools used to assess the risk in NPP: HAZOP, FMEA/FMECA, ETA, FTA);
18.00-19.00 - supper;

04.09.2013 (Wednesday)

8.00-8.45 - breakfast;

9.15-11.00 – lecture of Zbyszek Szeliga **”Nuclear power plant simulation model VVER 1000”** (e.g.: construction and principles of operations VVER1000 nuclear reactor, presentation of basic features of VVER1000 simulator, discussion of potential breakdown states generated by the software);

11.15-13.00 - lecture of Wojciech Zacharczuk **”Selected issues concerning safety design and operation of nuclear reactors”** (e.g.: presentation of construction solutions increasing safety of utilization of nuclear reactors and power plants on examples of CANDU reactor and Advanced CANDU Reactor, discussion of its advantages and disadvantages in the context of European legal regulations and control);

13:00-14.00- dinner;

14.15-18.00 - projects in groups of five students under the supervision of academic staff **”Selected issues concerning thermal-balance calculations of PWR nuclear power plants”**;

18.00-19.00 - supper;

19.00–22.00 – get-together party;

05.09.2013 (Thursday)

8.00-8.45 - breakfast;

9.15-16.00 - **field study at Jaslovskie Bohunice Nuclear Power Plant** (e.g.: visit in Information Centre, training from safety procedures and behavior at the area of NPP; presentation of the Jaslovskie Bohunice NPP history and current state-of-art, dosimetry control procedures, the recovery hall of potential radioactive wastes from nuclear power plant).

18.00-19.00 - supper;

06.09.2013 (Friday)

8.00-8.45 – breakfast;

10.15-16.00 – **field study at Mochovce Nuclear Power Plant** (e.g.: visit in Information Centre, training from safety procedures at the area of nuclear power plant, visit at the area of Mochovce 1 and 2 Nuclear Power Plants: dosimetry procedures, primary and secondary cycles, third cycle connected with cooling towers; presentation of the control room simulator for staff training; National Dump of Low- and Medium-radioactive Wastes (RU RAO) located near Mochovce nuclear power plant; safety procedures of waste dump, discussion about the system of transportation and unloading of waste boxes, system of dosimetry control and monitoring of the environmental parameters around the RU RAO);

17.30-18.30 - trip to Nitra city;

21.00 – supper

07.09.2013 (Saturday)

8.00-8.45 – breakfast;

9.15-13.00 – laboratory in groups of five students under the supervision of academic staff – nuclear reactor simulator **”The investigation and analysis of the main reactor parameters variation during normal operation and load reduction routine”**;

13:00-14.00- dinner;

14.15-18.00 - **project in group** of five students under the supervision of academic staff – continuation;

18.00-19.00 - supper;

19.00-21.00 – trip to Inner Western Carpathians

08.09.2013 (Sunday) – free day –

8.00-8.45 - breakfast;

9.00-18.00 – trip to Gabčíkovo hydro-power plant, see sighting of Bratislava city and transport museum;

18.00-19.00 - supper;

09.09.2013 (Monday)

8.00-8.45 – breakfast;

9.15-13.00 – laboratory in groups of five students under the supervision of academic staff – nuclear reactor simulator **”The investigation and analysis of the main reactor parameters variation during perturbations and accident situations part I”**;

13.00-14.00- dinner;

14.15-18.00 - **project in group** of five students under the supervision of academic staff – continuation;

18.00-19.00 - supper;

10.09.2013 (Tuesday)

8.00-8.45 – breakfast;

9.15-13.00 – laboratory in groups of five students under the supervision of academic staff – nuclear reactor simulator **”The investigation and analysis of the main reactor parameters variation during perturbations and accident situations part II”**;

13.00-14.00- dinner;

14.15-18.00 - **project in group** of five students under the supervision of academic staff – continuation;

18.00-19.00 - supper;

11.09.2013 (Wednesday)

8.00-8.45 – breakfast;

9.15-13.00 – laboratory in groups of five students under the supervision of academic staff – nuclear reactor simulator **”Thermal and hydraulic calculation of VVER1000 nuclear reactor in Temelin”**;

13.00-14.00 - dinner;

14.15-18.00 - **project in group** of five students under the supervision of academic staff – continuation;

18.00-19.00 - supper;

12.09.2013 (Thursday)

8.00-8.45 – breakfast;

9.15-10.00 - invited lecture of Andrzej Tatarek **”30 years of Polish nuclear programs – achievements and perspectives”**;

10.15-12.00 – invited lecture of WANO Paris Centre – **”Technical and human accidents in Nuclear Power Plants occurred in the last 50 years”** (given by Paweł Regucki on behalf of Mr. Andre Capponi);

12.00-13.00 – invited lecture of Pavel Kolat **”History and perspectives of development of Temelin nuclear power plant in Czech Republic”**;

13.00-14.00 - dinner;

14.15-16.00 – **presentation of the results of projects** prepared by groups of five students;

16.15-17.00 - **closing ceremony of intensive program** – presentation of certificates;

17.00- departure;