PANEL: TEACHING UNDERGRADUATE INFORMATION ASSURANCE IN RUSSIA

Anatoli Maljuk, Natalia Miloslavskaia, and Alexander Tolstoi
Moscow Engineering Physics Institute (State University) milmur@mephi.edu, ait@mephi.edu

According to the Russian educational system first two years at the higher educational institutions are destined for basic education when the students are taught humanities and science. Only after that they begin to study disciplines of their speciality. There are seven specialities on information security (IS) in Russia because this area is very complicated and includes not only technical but also legal, organizational and other aspects.

Teaching IS at undergraduate level is divided into three main streams.

1. For future specialists on IS that means teaching of introduction to their speciality. Duration of that educational course at the Moscow Engineering Physics Institute (State University) (MEPhI) is 32 hours (1 term). Some years ago we have tried to teach it on the 5th term (3rd year). But the practice have shown that it is too late. The reason is the absence of links with their basic education. Now we teach "Introduction to IS" at the 1st term. Duration of the course is 68 hours including 34 hours of lectures. The other 34 hours are intended for self-work of the students ending with writing and protecting of an essay on the topic given by a Professor. The main parts of the course are the following: IS threats in computer-based systems; main tasks and categories of information protection systems (IPS); problems of user identification and protection against information leakage via electromagnetic radiation; cryptology; computer viruses and protection against them; organizational and legal maintenance of IS; principles of IPS design. Every part of the course is logically connected with the educational courses taught on the following terms. A Professor points out what prerequisites from mathematics, computer science, cybernetics and electronics are needed for successful

C. Irvine et al. (eds.), *Security Education and Critical Infrastructures*
© Springer Science+Business Media New York 2003

learning of those courses. "Introduction to IS" have become basic course for the Russian universities preparing expert on IS.

2. The "ISB" course has been taught for specialists on information technologies for the last ten years. At present the course is an integral component in expert training for any field. Information exists at any area of knowledge and of our lives (for example, medical data, privacy, copyright, etc). It should be protected against different threats. Our experience have shown that it is more effective to teach IS for that category of students not as one separate course, but elements of IS maintenance should be described every time at every educational course when it is needed. Besides at the beginning of the education on the 1st year we should teach one introductory ISB course, discussing both IS problems for information technologies and methods and tools of information protection. The course should prepare the students for perception of the following specialized courses on information technologies. There is no one standard course on that theme in Russia. Every educational institution decides how to teach ISB and in what courses itself.
3. The "ISB" course is needed for non-professional on information technologies as well. That is why we taught it for all MEPhI's faculties – for mathematicians, physicians and so on. There are some specifics that should be stressed specially. The best period for its teaching is the 5th term. There is such a basis course in Russia. But our society is not ready enough for teaching it at present because it is very difficult to approve that IS affects all spheres of human live including art, culture, literature etc.

What are the prerequisites for IS classes? The knowledge gained at school is sufficient. We clearly understand that it should be a separate course discussing different aspects of IS problematics at school. Unfortunately we have not it at present. The potential students know about IS problems from mass media mainly. The Russian universities as a rule have several basic secondary schools where it is necessary to begin teaching "ISB". "School – higher education" joint efforts are the best solution of expert training on IS.

The main form of teaching IS at the undergraduate level is lectures. That is why the number of students of one faculty (at MEPhI 100-120 trainees) determines the size of classes. The total amount of the 3rd year students is about 1000. All of them should pass progress testing in the middle and at the end of the term. It is a great problem for a Professor to talk with all of them. We have found a very effective solution – to use new educational technologies in the form of distance progress testing via the MEPhI Intranet.

We have no practical laboratory works for undergraduates. They are designed only for graduates for specialized courses on different IS aspects.

While teaching IS ethics problems are discussed. But only graduates work at "Network Security" Scientific and Research Laboratory. They are old enough to understand responsibility for all their activities at the Laboratory.