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Module Specification

Course/Module name: ICT15B5
Programme (Energy/ICT): ICT_Security management
ECTS: 6
Type Bachelor/Msc : Bachelor
Course / Module name: **Security Management**
Scope and form: Classical course + labs in French (available for classical full-time students and also for part-time students), classical course + lab in English (+ academic project, optional in both languages), academic project
Duration (weeks; Hours/week): 1 semester,

- On a 15-week basis, 3 contact-hours/week for the course,
- 3 day per semester lab (one lab duration is 6 hour),
- Academic project is around one day per week of autonomous work (some meetings with the teacher) during 15 weeks

Type of assessment: Reports about labs, final exam, report + defense for the academic project
Qualified Prerequisites: Mainly networking (intermediate or advanced level), industrial computing
General course objectives: transmission systems – network administration – securisation of network architectures – Points to take into account to set a security policy
Topics and short description: This course deals with the management of security. The mechanisms (technical, organizational, methodological) needed to design, implement, operate and maintain a network infrastructure are taught and practiced through the labs and the academic project. Concerning the academic project: the students will have to design a network with security aspects and a wireless extension, to implement it, and be audited by another group of students. Some meetings with the teachers will be organised to validate the advancements of works.

Lectures syllabus:
1. Introduction to dependability, principles of security (physical, exploitation, logical, application, telecommunications…)
2. Strategies of attacks and organisms for security
3. Strategies and policies for security
4. Technologies for security, firewall
5. Cryptographic issues
6. Security Protocols
7. Virus
8. Intrusion detection systems
10. Security thanks to networks administration and management

Learning outcomes:

Knowledge	Skills	Competences
Errors detection	Configuration of an	Designing, maintaining and

	operating system (Windows, W. Server, Linux)	auditing a secure network architecture in its environment
symmetric and asymmetric cryptography	configuration of a firewall	contributing in the setting of a security policy
security protocols	configuration of a router (and wireless router) and client	*Academic project*: Teamwork
Standards	*Academic project* : communication	*Academic project*: project management
	Academic project: organizational skills	*Academic project*: multicultural environment

Course recommended literature:

- G. Avoine, P. Junod, P. Oechslin – Sécurité informatique, exercices corrigés – Vuibert, Paris, 2006
- Security for industrial communication systems, Dacfey Dzung, Martin Naedele, Thomas P. Von Hoff, Mario Crevatin, pp. 1152-1177, Proceedings of the IEEE, Vol. 93, n° 6 "Industrial Communication Systems", June 2005
- La sécurité des réseaux-First steps, Tom Thomas, Cisco Press, 2005
- Les réseaux, édition 2005, G. Pujolle, Eyrolles 2004
- G. Avoine, P. Junod, P. Oechslin – Sécurité informatique, exercices corrigés – Vuibert, Paris, 2006
- SSL VPN, Understanding, evaluating and planning secure, web-based remote access – J. Steinberg & T. Speed, 2005.
- S. Ghernaouti-Helie – *Sécurité informatique et réseaux* – Dunod, 2005
- F. Halsall – Computer networking and the internet – Addison Welseley, 2005 + additional student support at www.pearsoned.co.uk/halsall
- E. Cole, R. Krutz, JW Conley - *Network security bible* – Wiley, 2005

Special Considerations: Generically none for this module but should be commented on by the institution delivering the module.