Wireless Body Area Networks: Current Research and Future Trends
(Short Course)

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Day	Topics	Classes (45 min)
1.	1. Body area networks (8:30-10:00) • Introduction • Future e-Health systems: BAN and 4G Integration	2
	2. System Architecture (10:15-11.00 and 12:00-13:30) • IEEE 802.15.6 Physical & Medium Access Control Layers • Overview of MAC Protocols for BANs • MAC Techniques for co-existing BANs	3
2.	3. Localization in BANs (8:30-10:00) • Localization in BANs • Time of Arrival (ToA) and Time Difference of Arrival (TODA) • Direction of Arrival (DoA)	2
	4. Application (10:15 - 11:45) • Wireless Capsule Endoscopy: Introduction and overview • Wireless Endoscopy for Non-invasive Surgery and NOTES	2

Textbooks:

- H. B. Li, K. Y. Yazdandoost, B. Zhen, Wireless Body Area Network, River Publishers 2010.
- R. Istepanian, *M-Health: Emerging Mobile Health Systems* (*Topics in Biomedical Engineering. International Book Series*), Springer 2006.
- D. O. Faigel, D. R. Cave, *Capsule Endoscopy,* Saunders Press, 2006.
- A. Lymberis , *Wearable eHealth Systems For Personalised Health Management: State Of The Art and Future Challenges* (*Studies in Health Technology and Informatics*), IOS Press 2004.
- G. Z. Yang (Ed.), *Body Sensor Networks*, Springer 2006.

Journal References:

- C. Otto, A. Milenkovic, C. Sanders, E. Jovanov, "System Architecture of a Wireless Body Area Sensor Network for Ubiquitous Health Monitoring," *Journal of Mobile Multimedia*, Vol. 1, No. 4, January 2006, pp. 307-326.
- N. Patwari, J. N. Ash, S. Kyperountas, A. O. Hero, R. L. Moses, N. S. Correal, "Locating the Nodes – Cooperative localization in wireless sensor networks" *IEEE Signal Processing Magazine*, July 2005. 5pp. 4-69.
- J. L. Toennies, G. Tortora, M. Simi, P. Valdastri, and R. J. Webster III, "Swallowable Medical Devices for Diagnosis and Surgery: The State of the Art".
- B. Latré, B. Braem, I. Moerman, C. Blondia, P. Demeester, "A survey on wireless body area networks"
- S. Ullah, B. Shen, S. M. Riazul Islam, P. Khan, S. Saleem, K. S. Kwak, "A Study of Medium Access Control Protocols for Wireless Body Area Networks" in IEEE Globecom 2010 Workshop on Mobile Computing and Emerging Communication Networks. http://adsabs.harvard.edu/abs/2010arXiv1004.3890U: ArXiv e-prints, April 2010, pp. 1–13.
- S. Ullah, B. Shen, S. M. Riazul Islam, P. Khan, S. Saleem, K. S. Kwak, "A Comprehensive Survey of Wireless Body Area Networks" Springer Journal on Mobile Networks and Applications, Available at: http://dx.doi.org/10.1007/s11036-010-0260-8, August 2010.