

# PERVASIVE COMPUTING

## Fall 2018 – Graduate Course

### Synopsis:

“Pervasive computing is about moving beyond the traditional desktop computing model into embedding computing into everyday objects and everyday activities” <sup>1</sup>. The objective of the course is to introduce and develop understanding of pervasive computing. Students will learn various enabling technologies, architecture, protocols and services associated with pervasive systems. It also provides an overview of recent advancements in this particular area. The aim is to involve students in research activities, particularly through addressing current research challenges within pervasive systems.

### Course Contents:

- Pervasive/Ubiquitous Computing
- Evolution of Modern Computing
- Architectures and Frameworks
- Context-aware Computing
- Location-based Services
- Mobile Middleware
- Enabling Technologies and Protocols
- Data Fusion and Sequential Processing in Sensor Networks
- Assistive Technology
- Innovative system requirements, performance and benchmarking
- Challenges and Issues in Pervasive Computing
- Potential Research Areas

### Notes:

- Multiple reference books will be used to cover major topics. Contents of this course will comprise of material extracted from various books, online resources and high-impact journal papers.
  - Pervasive Computing and Networking, Mohammad S. Obaidat, John Wiley and Sons
  - Advances in Pervasive Computing and Networking, Boleslaw K. Szymanski, Springer
  - Pervasive Computing Handbook, Philippe Kahn, Springer
  - Articles from IEEE Pervasive Computing
  - Articles from Elsevier Pervasive-and-Mobile-Computing

- Special emphasis on research project will be given and students will be guided to publish in reputable journals and conferences.

### **Instructor:**

The course will be conducted by Dr. Muhammad Taha Jilani (m.taha@pafkiet.edu.pk). He obtained PhD degree from Universiti Teknologi PETRONAS, Malaysia in 2016. Since then, he is working as Assistant Professor at Graduate School of Science & Engineering, PAF KIET. His research interest includes pervasive systems, internet of things, wireless networks and smart sensors. He has authored or coauthored more than 25 research articles in indexed journals and international conferences.

<sup>1</sup> D. Saha, "Pervasive computing: a paradigm for the 21st century." *Computer* 36.3 (2003): 25-31.