**Course Code**: COMP-533  
**Course Title**: Digital Currencies in Motion  
**ECTS Credits**: 10

**Department**: Computer Science  
**Semester**: Fall/Spring/Summer  
**Prerequisites**: DFIN-511

**Type of Course**: Elective  
**Field**: Computer Science  
**Language of Instruction**: English

**Level of Course**: 2nd Cycle  
**Year of Study**: 2nd  
**Lecturer(s)**: Dr. Constandinos X. Mavromoustakis

**Mode of Delivery**: Distance Learning  
**Work Placement**: N/A  
**Co-requisites**: None

**Objectives of the Course:**

The main objective of this course is to provide students with the basic concepts of the Mobile Computing technologies, Services and Protocols and the related Platforms that will assist them to realize, understand, apply, assess and manage Mobile Services and related Technologies with respect to the digital currencies.

Topic areas of the course include:

- Mobile Computing technology and Digital Currencies
- Supported Platforms for the Mobile Computing Systems (Mobility management and computation and Client/Server structures, N-tier architectures and Middleware of the mobile computing)
- Cooperative communication and resource outsourcing (existing Middlewares)
- Seamless Integration of Broadcast and the Technologies for Capacity Enhancement in Mobility Support
- MP2P Resource Exchange/Sharing (P2P) Protocols
- Mobile Peer-to-Peer (MP2P) communication and services/Wireless mining pools (case of -for example- LiteCoin mining)
- Mobile caching/passive buffering, Client site caching control and Strategies for Query Processing
| Limitations in Mobile Computing and the impact on communication/Vulnerabilities and trade-offs |
| Wireless resource migration for mining resource pools |
| Cloud Computing and its impact on Digital Currencies |
| Using Cloud-based infrastructures (case of Digital Currency as a Service) |
| Case Studies in Digital Currencies and Related Mobile Platforms |

**Learning Outcomes:**

Upon completion of this course, students are expected to be able to:

1. Understand, employ, critically assess and evaluate different Mobile Systems and related platforms used for Digital Currencies.
2. Understand and analyze principles of MP2P architectures and their application in Digital currencies.
4. Provide students with deep knowledge for Mobility management and computation and Client/Server structures, N-tier architectures and Middlewares supporting the Mobile Computing paradigm.
5. Provide students with deep knowledge on Mobile Computing and Resources for enabling reliable accommodation of the Digital Currency applicability.
6. Critically assess and acquire the knowledge on Mobile Computing and Services.
7. Provide students with knowledge for the Mobile Multimedia paradigm, and assess the Digital Currency applicability.
8. Identify, describe and apply Mobile and Cloud-based services in Digital Currencies.

**Course Contents:**

3. Cooperative communication and resource outsourcing (existing Middleware).
4. Mobile Peer-to-Peer (MP2P) communication and services/Wireless mining pools.
5. Mobile caching/passive buffering, Client site caching control, mobile Proxies and Strategies for Query Processing.
8. Wireless resource migration for mining resource pools.

Learning Activities and Teaching Methods:
Lectures, Webex Sessions and Tutorials, Assignments and Project.

Assessment Methods:
Project, Mid-term Exam, Final Exam.

Recommended Reading:

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<th>Authors</th>
<th>Title</th>
<th>Publisher</th>
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<th>ISBN</th>
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Note: There will be a selection of articles from different repositories (i.e. arxiv.org server) that will allow students to acquire the state-of-the-art knowledge in Mobile Computing technologies.

Recommended Articles / Reading List:

3. Majority is not Enough: Bitcoin Mining is Vulnerable (http://arxiv.org/abs/1311.0243 )
4. Theoretical Bitcoin Attacks with less than Half of the Computational Power (draft), Lear Bahack (arXiv:1312.7013)