1. **Course Number and Course Title:**
   CMP 416 – Internet and Network Computing

2. **Credit Hours:**
   3-2-3

3. **Prerequisites and/or Co-Requisites :**
   Prerequisites: CMP 310 (Operating Systems) and CMP 320 (Database Systems) and COE 371 (Computer Networks I)
   Prerequisite/concurrent: N/A
   Co-requisites: N/A

4. **Name and Contact Information of Instructor:**
   Dr. Gerassimos Barlas

5. **Course Description:**
   Studies the design of Internet-based clients and servers; and multi-tiered applications, network application security; distributed object computing, remote method invocation, Internet technology standards such as XML and Javascript; and building Internet-based applications.

6. **Textbook and other supplemental materials:**
   Textbook:
   - Jake Kronika, Aidas Bendoraitis, *Django 2 Web Development Cookbook: 100 practical recipes on building scalable Python web apps with Django 2*, 3e, Packt Publishing, 2018, ISBN-13: 978-1788837682

   Supplemental materials
   - Robert Sebesta, "*Programming the World Wide Web*", 8e, Pearson, 2014, ISBN-13: 9780133775983
   - Cay S. Horstmann and Gary Cornell, *Core Java, Vol. 2: Advanced Features,* 8e, 2008, Prentice Hall PTR, 978-0132354790
   - Bryan Basham, Kathy Sierra and Bert Bates, "Head First Servlets and JSP", O'Reilly Media, 2e, 2008, Packt Publishing ISBN13: 978-0596516680
   - Michael Mikowski, Josh Powell, Single Page Web Applications: JavaScript end-to-end, Manning Publications, 2013, ISBN-13: 978-161729075

7. **Course Learning Outcomes:**
   Upon completion of the course, students will be able to:
   1. Design and implement server-side application logic using TCP/IP sockets, Remote Method Invocation (RMI), Java Server Pages (JSP) and Python/Django.
   2. Build Internet applications that employ database connectivity (e.g. JDBC) and/or data persistence (e.g. JPA).
   3. Implement the Model-View-Controller, factory and singleton design patterns using the technologies covered in the course.
   4. Construct applications that use JSON and XML technologies.
   5. Add security mechanisms to Web applications.
   6. Use Javascript to programmatically control web clients.

7. Design and build Web applications using state-of-the-art development tools and web application frameworks.

8. Teaching and Learning Methodologies:

Methods include lectures, labs, homework, quizzes, exams, class discussions and a project.

9. Course Topics and Schedule:

Topic/Activity	Weeks
Java I/O Revision	Week 1
Client/Server applications using TCP and UDP	Week 2
Java RMI	Week 3
JDBC & Java Persistence API	Week 4
HTTP Primer	Week 5
Servlets	Week 6
Java Server Pages	Week 7
XML	Week 8
Javascript	Week 9
AJAX & JSON	Week 10
Python Revision	Week 11
Django Templates, Forms & Views	Week 12
Django Models	Week 13
Python Serialization	Week 14
Django Security	Week 15
Exams	Week 16