NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF SCIENCES
COMPUTER SCIENCE PROGRAM

CC482 – CORE AND NETWORKS FOR PARALLEL COMPUTING

I. GENERAL INFORMATION

CODE	: CC482 – Core and networks for parallel computing
SEMESTER	: 8
CREDITS	: 02
HOURS PER WEEK	: 4 (Theory – Laboratory)
PREREQUISITES	: CC461 – Compilers CC481 – Network Administration
CONDITION	: Mandatory

II. COURSE DESCRIPTION

Build an operating system and communication networks that allow the use of multiple cores.

III. LEARNING UNITS

1. **Architecture, design and implementation of the ExoKernel.**
2. **Architecture, design and implementation of libraries that can be part of the operating system (libases).**
3. **Definition of Control and Security in operating system libraries (libOS)**
4. **Network multiplexing**
5. **Protection of discs**
6. **Protocols: Architecture, design, and implementation**
7. **Design and implementation of the HTTP protocol**
8. **Design and implementation of the Web Server architecture**
9. **Network File System**
10. **Router architecture, design, and implementation**
11. **Switch architecture, design, and implementation**

12. File system with guaranteed changes (Journal file system)

13. Global File System

14. Search engine

15. Database

IV. BIBLIOGRAPHY

- http: //www.globus.orghttp: //pdos.csail.mit.edu/exo.html
- http://en.wikipedia.org/wiki/Exokernel
- http://pdos.csail.mit.edu/exo/distrib.html
- http://www.cs.berkeley.edu/~brewer/cs262b-2004/Lec-Exokernel.pdf
- http://www.cs.utexas.edu/users/dahlin/Classes/UGOS/reading/engler95exokernel.pdf
- http://pdos.csail.mit.edu/PDOS-papers.html
- P. J. Hatcher and Michael J. Quinn. Data-Parallel Programming on MIMD Computers. Published by MIT Press, 1991
- C. Xavier and S.S. Ivengar Introduction to parallel algorithms. Published by Wiley-Interscience, 1998
- J. Reinders. Intel Threading Building Blocks: Outfitting C ++ for Multi-core Processor Parallelism. Published by O'Reilly, 2007.
- Shameem Akhter and Jason Roberts. Multi-Core Programming Increasing Performance through. Published by Intel Corporation; 1ST edition 2006.
- Andrew S. Tanenbaum and Maarten van Oteen. Distributed Systems: Principles and paradigms, 2nd. ed. Published by Prentice Hall, 2006.
- John L. Hennessey and David A. Patterson. Computer Architecture: A Quantitative Approach. 4th ed. Published by Morgan Kaufmann, 2006.
- Maurice J. Bach. Design of the UNIX Operating System. Published by Prentice Hall PTR, 1986.
- Kaare Christian and Susan Richter, The UNIX Operating System. Published by Wiley Professional Computing, 1993.
- Stephen W. Keckler, Kunle Olukotun and H. Peter Hofstee. Multicore Processors and Systems (Integrated Circuits and Systems). Published by Springer .2009