Universidad Nacional Mayor de San Marcos
School of Computer Science
Syllabus of Course
Academic Period 2018-II

1. **Code and Name:** CS4002. Capstone Project I (Mandatory)
2. **Credits:** 3
3. **Hours of theory and Lab:** 3 HT; (15 weeks)
4. **Professor(s)**

   Meetings after coordination with the professor
5. **Bibliography**

[Ass08] Association for Computing Machinery. *Digital Libray*. http://portal.acm.org/dl.cfm. Association for Computing Machinery, 2008.

[Cit08] CiteSeer.IST. *Scientific Literature Digital Libray*. http://citeseer.ist.psu.edu. College of Information Sciences and Technology, Penn State University, 2008.

[IEE08] IEEE-Computer Society. *Digital Libray*. http://www.computer.org/publications/dlib. IEEE-Computer Society, 2008.

6. **Information about the course**

   (a) **Brief description about the course** This course aims to allow the student to carry out a study of the state of the art of a topic chosen by the student for his thesis.

   (b) **Prerrequisites:** CS2102. Analysis and Design of Algorithms. (5^{th} Sem)

   (c) **Type of Course:** Mandatory

   (d) **Modality:** Face to face

7. **Specific goals of the Course**

   - That the student carries out an initial investigation in a specific subject realizing the study of the state of the art of the chosen subject.
   - That the student shows mastery in the subject of the line of investigation chosen
   - That the student choose a teacher who dominates the research chosen as an advisor.
   - The deliverables of this course are:

     Avance parcial: Solid bibliography and progress of a Technical Reporto.

     Final: Technical Report with preliminary comparative experiments that demonstrate that the student already knows the existing techniques in the area of his project and choose a teacher who dominates the area of his project as an adviser of his project.

8. **Contribution to Outcomes**

   a) An ability to apply knowledge of mathematics, science. (**Usage**)

   b) An ability to design and conduct experiments, as well as to analyze and interpret data. (**Assessment**)

   c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. (**Usage**)

e) Understand correctly the professional, ethical, legal, security and social implications of the profession. (**Assessment**)

f) An ability to communicate effectively. (**Usage**)

h) A recognition of the need for, and an ability to engage in life-long learning. (**Usage**)

i) An ability to use the techniques, skills, and modern computing tools necessary for computing practice. (**Assessment**)

l) Develop principles research in the area of computing with levels of international competitiveness. (**Usage**)

a) An ability to apply knowledge of mathematics, science. (**Usage**)

b) An ability to design and conduct experiments, as well as to analyze and interpret data. (**Assessment**)

c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. (**Usage**)

e) Understand correctly the professional, ethical, legal, security and social implications of the profession. (**Assessment**)

f) An ability to communicate effectively. (**Usage**)

h) A recognition of the need for, and an ability to engage in life-long learning. (**Usage**)

i) An ability to use the techniques, skills, and modern computing tools necessary for computing practice. (**Assessment**)

l) Develop principles research in the area of computing with levels of international competitiveness. (**Usage**)

9. Competences (IEEE)

C1. An intellectual understanding and the ability to apply mathematical foundations and computer science theory.⇒ **Outcome a,b,c**

C20. Ability to connect theory and skills learned in academia to real-world occurrences explaining their relevance and utility.⇒ **Outcome e,f,g**

CS2. Identify and analyze criteria and specifications appropriate to specific problems, and plan strategies for their solution.⇒ **Outcome h,i,l**

C1. An intellectual understanding and the ability to apply mathematical foundations and computer science theory.⇒ **Outcome a,b,c**

C20. Ability to connect theory and skills learned in academia to real-world occurrences explaining their relevance and utility.⇒ **Outcome e,f,g**

CS2. Identify and analyze criteria and specifications appropriate to specific problems, and plan strategies for their solution.⇒ **Outcome h,i,l**

10. List of topics

1. Lifting the state of the art

11. Methodology and Evaluation
Methodology:

Theory Sessions:
The theory sessions are held in master classes with activities including active learning and roleplay to allow students to internalize the concepts.

Lab Sessions:
In order to verify their competences, several activities including active learning and roleplay will be developed during lab sessions.

Oral Presentations:
Individual and team participation is encouraged to present their ideas, motivating them with additional points in the different stages of the course evaluation.

Reading:
Throughout the course different readings are provided, which are evaluated. The average of the notes in the readings is considered as the mark of a qualified practice. The use of the UTEC Online virtual campus allows each student to access the course information, and interact outside the classroom with the teacher and with the other students.
Evaluation System:

12. Content

<table>
<tr><td colspan="2">Unit 1: Lifting the state of the art (60)</td></tr>
<tr><td colspan="2">Competences Expected: C1,C20,CS2</td></tr>
<tr><td>Learning Outcomes</td><td>Topics</td></tr>
<tr><td>Make a bibliographical survey of the state of the art of the chosen subject (this probably means 1 or 2 chapters of theoretical framework in addition to the introduction that is chapter I of the thesis) [Usage]
Writing a latex document in paper format with higher quality than Project I (master tables, figures, equations, indices, bibtex, cross references, citations, pstricks) [Usage]
Try to make presentations using prosper [Usage]
Show basic experiments [Usage]
Choose an advisor who dominates the research area [Usage]</td><td>Perform an in-depth study of the state of the art in a certain topic in the area of Computation.
Writing technical articles in computing.</td></tr>
<tr><td colspan="2">Readings : [IEE08], [Ass08], [Cit08]</td></tr>
</table>