Automated Planning

Academic Year: (2020 / 2021) **Review date: 09-07-2020**

Department assigned to the subject:

Coordinating teacher: GARCIA OLAYA, ANGEL

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

None

OBJECTIVES

- To analyze state-of-the-art automated planning techniques
- To characterize every technique as well as the domains they suit better
- To use tools that implement techniques discussed in class
- To identify different open issues for research in order to suggest new Master and PhD thesis

DESCRIPTION OF CONTENTS: PROGRAMME

Introduction
  Introduction to planning
  Knowledge representation
  Heuristic Search
Classic planning
  State space. STRIPS and Prodigy
  Partial plans. UCPOP
Neoclassic planning
  Plan graphs. GRAPHPLAN
  SAT planning. SATPLAN
Heuristic planning
  Early approaches. HSP, FF
  New heuristics and planners. Fast downward, pattern data bases, landmarks, symbolic planning, portfolios
  Hierarchical Task Networks (HTN). SHOP2
  Machine learning
Other planning paradigms
  Temporal planning (scheduling)
  Planning under uncertainty

LEARNING ACTIVITIES AND METHODOLOGY

Theory classes
One homework per two weeks
Final project
Oral presentation of project
Individual office hours

ASSESSMENT SYSTEM

50% oral presentation of final project
50% sum of homeworks
Extraordinary evaluation: 100% project

% end-of-term-examination:	50
% of continuous assessment (assigments, laboratory, practicals…):	50

BASIC BIBLIOGRAPHY

- James F. Allen, James Hendler y Austin Tate (eds.) Readings in planning, Morgan Kaufmann, 1990..

- Malik Ghallab, Dana Nau, Paolo Traverso Automated Task Planning. Theory & Practice, Morgan Kaufmann, 2004.

- Stuart Russell y Peter Norvig Artificial Intelligence: A modern approach, Prentice Hall, 2010