FACULTY OF SCIENCE AND TECHNOLOGY

COURSEWORK FOR THE BSc (HONS) COMPUTER SCIENCE / INFORMATION TECHNOLOGY; YEAR 3

ACADEMIC SESSION MARCH 2017

CSC3206: ARTIFICIAL INTELLIGENCE **DEADLINE**

Group Assignment 2 **Friday Week 12 12pm**

GROUP NAME: _____

NRIC/PASSPORT NO: _____

INSTRUCTIONS TO CANDIDATES

- This assignment will contribute 25% to your final grade.
- This is a **GROUP** assignment.

[This paper contains THREE questions printed on THREE pages]

Expert Systems with Uncertainty

Subject Learning Outcomes assessed:

- Analyse problem scenarios and justify the design and implementation of appropriate expert systems

Some of the non-technical outcomes of this assignment would be to develop leadership, teamwork and project management skills. It should also improve communication skills among team members. These skills are considered critically important in any organization and industry.

Progress Monitoring

The group members are free to meet as frequently as required. You are old enough to self-monitor and to self-regulate.

Leadership

Leadership can be in the form of one group leader for the whole duration of this assignment, or there could be a rotating leadership for different phases of the assignment. It is also possible to have no outright leader, especially if the tasks can be divided evenly among group members, working as individuals or as sub-groups of two.

Question 1

You are to develop a simple expert system using an appropriate development tool, which may be an expert system shell (e.g. JESS, d3web), an agent-based development environment (e.g. Netlogo), or a suitable programming language (e.g. C#, JAVA, PROLOG), based on one of the following domain areas:

Scenario	Problem Domain	Knowledge Domain
1	Education	Decision-support to decide programme of study and career options
2	Provision of assistance to handicapped community	Object recognition / classification for visually impaired community
3	Consumer behaviour	House "feng shui" to assist house-buyer

Your work must include the following:

i. Comparative analysis of the various expert system development tools
ii. Justification of the tool(s) of choice
iii. Description and justification of expert system design (approach/methodology, system components, major design elements, system strengths and/or weaknesses, etc.)
iv. Write no more than eight A4-sized pages (11pt size 1.15 spacing) according to the grading criteria

	Level 1 (40 – 49)	Level 2 (50 – 59)	Level 3 (60 – 69)	Level 4 (70 – 100)
Comparative analysis of ES tools (15 marks)	Poor review, poor analysis of ES development tools and features	Adequate review, adequate analysis of ES development tools and features	Good review, good analysis of ES development tools and features	Excellent review, in-depth analysis of ES development tools and features
Justification of the tool(s) of choice (5 marks)	Weak justification owing to poor understanding of the tool	Adequate justification owing to adequate understanding of the tool	Good justification owing to good understanding of the tool and a number of its strengths	Strong justification owing to in-depth understanding of the tool and its key strengths
Description and justification of ES design (15 marks)	Main design considerations in place, poor organisation indicates a cut-and-paste job	Main design considerations in place with awkward transitions indicative of little checking of completed work	Good organization with most design considerations discussed	Logically organised with smooth transitions, all design considerations discussed thoroughly
Working ES, Application of Methodology (20 marks)	The system reflects a weak application of the theory (previous item)	The system reflects an adequate application of the theory (previous item)	The system reflects a good application of the theory (previous item)	The system reflects a systematic and precise application of the theory (previous item)
Literature review* (5 marks)	Little evidence of research into the topic, insufficient number of sources / wrongly cited sources	Adequate research with numerous errors in sources/insufficient number of sources	Good research with a few errors in sources/insufficient number of sources	Exceptionally well written report indicates thorough research, error-free and all sources properly cited

Question 2

Introduce uncertainty into your expert system.

i. Compare the quality of your recommendations / advice of this ES with that of the ES before the introduction of uncertainty.
ii. Write no more than four A4-sized pages (11pt size 1.15 spacing) according to the grading criteria

	Level 1 (40 – 49)	**Level 2 (50 – 59)**	**Level 3 (60 – 69)**	**Level 4 (70 – 100)**
Working ES, Application of Methodology (20 marks)	The system reflects a weak application of uncertainty	The system reflects an adequate application of uncertainty	The system reflects a good application of uncertainty	The system reflects a systematic and precise application of uncertainty
ES+Uncertainty vs ES only (10 marks)	Poor review, poor comparison	Adequate review, adequate comparison	Good review, good comparison	Excellent review, in-depth comparison
Literature review* (5 marks)	Little evidence of research into the topic, insufficient number of sources / wrongly cited sources.	Adequate research with numerous errors in sources/insufficient number of sources.	Good research with a few errors in sources/insufficient number of sources.	Exceptionally well written report indicates thorough research, error-free and all sources properly cited.

*Include the full list of references and include in-text citations wherever appropriate. Example of in-text citation is ".. **(Author_Name, 2010) showed that** ..." . would be referenced as:

"Author_Name, (2010). Title of article, Title of journal/conference, Name of publisher."

Question 3

Provide an objective description of the contributions of individual team members. A planned vs. actual work schedule is also required in the form of a Gantt Chart or any other type of scheduling template.

	Level 1 (40 – 49)	**Level 2 (50 – 59)**	**Level 3 (60 – 69)**	**Level 4 (70 – 100)**
Contribution of individual team members, Gantt chart (5 marks)	Work is heavily skewed towards ONE / FEW member(s), with vague / no job descriptions. Majority are sleeping partners.	Work is skewed towards ONE / FEW member(s), with vague / ambiguous job descriptions for everyone. A few sleeping partners.	Work is somewhat fairly divided between ALL members, with adequate job descriptions for everyone.	Work is fairly divided between the ALL members, with detailed job descriptions for everyone.