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| Module Title: | Artificial Intelligence for Games |
| Language of Instruction: | English |
| Credits: | 5 |
| NFQ Level: | 8 |
| Module Delivered In | 1 programme(s) |
| Teaching & Learning Strategies: | Traditional lectures are used to convey knowledge from teacher to student, and students are actively encouraged to engage in discussion during class. During the practical sessions, students will undertake various laboratory exercises implementing and exploring a variety of algorithms. Group learning is also utilised via a module group project and also a cross-module group project as possible. A term paper will involve a more in-depth study of the topics raised. |
| Module Aim: | To immerse students in the formal theory, and the application of contemporary techniques in Artificial Intelligence for computer games development. |
| Learning Outcomes | |
| <i>On successful completion of this module the learner should be able to:</i> | |
| LO1 | Compare and contrast a number of search techniques including within adversarial environments |
| LO2 | Illustrate different techniques for modelling/implementing the Game space |
| LO3 | Apply appropriate AI techniques to enhance the Gaming experience |
| Pre-requisite learning | |
| Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i> | |
| No recommendations listed | |
| Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i> | |
| No incompatible modules listed | |
| Co-requisite Modules | |
| No Co-requisite modules listed | |
| Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i> | |
| No requirements listed | |

Module Content & Assessment

| Indicative Content | | | | |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------|------------------------|
| What is Intelligence? Turing Test. Chinese Room. Philosophical Implications, AI in Games Context. | | | | |
| Basic Behaviours Flocking, Swarming, Chasing, Evading. | | | | |
| Group Behaviours Flocking, Swarming, Coordinated movements, Squads | | | | |
| Search Search space, Basic search algorithms, Heuristic Search, A* Search, Advanced A* variants | | | | |
| Game Search Mini-max search, alpha-beta search, search space pruning | | | | |
| Basic Decision Making Finite State Machines, Decision Trees | | | | |
| Fuzzy Logic Fuzzification, Fuzzy Rule Application, Defuzzification, Combs Method | | | | |
| Assessment Breakdown | | | | % |
| Continuous Assessment | | | | 35.00% |
| Project | | | | 15.00% |
| End of Module Formal Examination | | | | 50.00% |
| Continuous Assessment | | | | |
| <i>Assessment Type</i> | <i>Assessment Description</i> | <i>Outcome addressed</i> | <i>% of total</i> | <i>Assessment Date</i> |
| Case Studies | Students are required to implement specific algorithms within a gaming context | 1,2,3 | 35.00 | n/a |
| Project | | | | |
| <i>Assessment Type</i> | <i>Assessment Description</i> | <i>Outcome addressed</i> | <i>% of total</i> | <i>Assessment Date</i> |
| Project | Intended as a group project | 1,2,3 | 15.00 | n/a |
| No Practical | | | | |
| End of Module Formal Examination | | | | |
| <i>Assessment Type</i> | <i>Assessment Description</i> | <i>Outcome addressed</i> | <i>% of total</i> | <i>Assessment Date</i> |
| Formal Exam | A written assessment of student's understanding and ability to conceptually apply the course material appropriately. | 1,2,3 | 50.00 | End-of-Semester |

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

| Workload: Full Time | | |
|----------------------------|--------------------|----------------------------------------|
| <i>Workload Type</i> | <i>Frequency</i> | <i>Average Weekly Learner Workload</i> |
| Lecture | 12 Weeks per Stage | 2.00 |
| Laboratory | 12 Weeks per Stage | 2.00 |
| Estimated Learner Hours | 15 Weeks per Stage | 5.13 |
| | Total Hours | 125.00 |

Module Delivered In

| Programme Code | Programme | Semester | Delivery |
|----------------|-----------------------------------------------------------------------------|----------|-----------|
| CW_KCCGD_B | Bachelor of Science (Honours) in Computer Games Development | 7 | Mandatory |