**Capstone Project Assessment Template**

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| Which of the following applies (circle as appropriate):  Proposal Assessment Progress Report Assessment **Final Assessment** | | | |
| Indicator | **Proposal Assessment**: In preparing to undertake your project, identify how or where or when this (choice) indicator is applicable to the project work you will undertake.  **Progress Report and Final Capstone Project Assessment**:  In undertaking your project, identify how or where or when you have delivered/demonstrated this (choice) indicator | self  assessment  (out of 5)  based on  descriptors in  table 2 | supervisor  and assessors  assessment  (out of 5)  based on  descriptors in  table 2 |
| PE1.1 | *Demonstrated use of sound knowledge of the engineering discipline at a phenomenological level, mathematics, natural and/or physical sciences for systematic investigation, interpretation analysis and solution of complex problems of engineering practice*  The development of the pattern recognition system used to classify patterns and evaluate them for gait analysis evident throughout section 11 and 12 of the report. | 4 | 0 1 2 3 4 5 |
| PE1.2 | *Advanced knowledge in a technical area in the student’s engineering discipline to a level that requires conceptual understanding of mathematics, numerical analysis, statistics, and computer and information sciences related to investigation, analysis, interpretation, assessment characterisation, prediction, evaluation, modelling, decision making, measurement, evaluation, and knowledge management techniques pertinent to the engineering discipline.*  Same as PE1.1, the programming of a Virtual Instrument K-Means Clustering for Gait Analysis required specific programming, medical and IT knowledge to design a completely functional program (*refer to section 11 and 12 of the report*). | 4 | 0 1 2 3 4 5 |
| PE1.5 | *Demonstrated knowledge of materials and resources relevant to a student’s discipline and the ability to select the most appropriate materials and techniques to meet a particular objective.*  The research into LabVIEW example VI’s and modifying them to suit the needs of the project (*refer to Fig 23 pg. 45 of the report*). This includes the development of the Sub VI’s.  The understanding of C and java programming and knowledge from the LabVIEW textbooks allowed the use of the programming tools to design and structure the program (*refer to section 11 Design and section 12 Findings*). | 4 | 0 1 2 3 4 5 |
| PE2.1 | *Demonstrated ability to identify the nature of a technical problem, make appropriate simplifying assumptions, achieve a solution, and quantify the significance of the assumptions to the reliability of the solution.*  Development of the program was not straightforward, compartmentalization was implemented in stages, where no clear solution was evident. Several prototypes and SubVI’s were created to test functionality and find the correct approach (*refer to section 11 Design and section 12 Findings*). | 4 | 0 1 2 3 4 5 |
| PE2.3 | *Demonstrated ability to address issues and problems that have no obvious solution, involving uncertainty, imprecise information, conflicting factors and require originality in analysis*  As in PE 1.1, the VI was specifically programmed to interact with the device. The development of smaller VI’s were required to constantly test the information flow in each compartmentalized stage as mentioned throughout the entire section 12 Findings. | 4 | 0 1 2 3 4 5 |
| PE2.6 | *Demonstrated ability to utilise a systems-engineering or equivalent disciplined, holistic approach to incorporate all considerations*  As in PE 2.1 the development of the pattern recognition system was deduced from the literature review of Gait analysis and upon understanding its method, led to the notion that its similar to that of a pattern recognition system. The K Means algorithm is a form of classification used by the system. | 3 | 0 1 2 3 4 5 |
| PE2.7 | *Demonstrated ability to partition a problem, process or system into manageable elements, for purposes of analysis or design; and of re-combining these to form the whole, with the integrity and performance of the overall system as the paramount consideration*  Creation of separate VI’s to test and observe the process of information flow, typically utilized to troubleshoot problems when data was not showing or incorrect. This led to the creation of Sub VI’s as well as the two main VI’s where sampling and evaluation were partitioned due to incompatibility (*refer to Design section 11 and Findings section 12*). | 4 | 0 1 2 3 4 5 |
| PE2.11 | *Demonstrated proficiency in employing technical knowledge, design methodology, and appropriate tools and resources to design components, systems or processes to meet specified performance criteria.*  The design of the pattern recognition system using LabVIEW. The programming of the Virtual Instrument (VI) was not straightforward, tools available on the LabVIEW VI software provided examples that assisted in the development progress of each stage in the design (*refer to Design section 11 and Findings section 12*) | 4 | 0 1 2 3 4 5 |
| PE3.1 | *Demonstrated effectiveness in discussion and negotiation and in presenting arguments clearly and concisely in both oral and written communication (including clear diagrams and engineering sketches or drawings)*  The documentation submitted for this Capstone project evident in the proposal, progress report and final report. The proposal made use of the Gantt chart to show the task and time allowance for each stage in the project. The final report contains flow diagrams to indicate the design process and logic (*refer to section 11.1, section 11.1.1 and 11.2*) | 4 | 0 1 2 3 4 5 |
| PE3.2 | *Demonstrated ability to locate, catalogue and use relevant information , including proficiency in accessing , systematically searching, analysing and evaluating relevant publications*  Performed a thorough research into the medical topic of gait analysis and its application. The research extended to the analysis techniques specifically the use of accelerometers and their results in order to completely under the design requirements of the project (*refer to Literature Review section 6 and references section 14*). | 4 | 0 1 2 3 4 5 |
| PE3.4 | *Demonstrated intellectual rigour and an ability to recognise limits to ones knowledge and seek advice, or undertake research, to supplement it*  Additional knowledge was required on the Capstone in terms of programming environment LabVIEW, gait analysis and K Means clustering the unsupervised learning algorithm (*refer to Literature Review section 6 and references section 14*). Thorough research was undertaken to achieve the required knowledge and have an adapt understanding on the design of the pattern recognition system. | 4 | 0 1 2 3 4 5 |
|  | total (out of 55) | 43 |  |

Additional assessment comments: