**Summary Statement**

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| **Competency Element** | **A brief summary of how you have applied the element** | **Paragraph number in the career episode(s) where the element is addressed** |
| **PE1 KNOWLEDGE AND SKILL BASE** | | |
| PE1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline | I learned to operate the DC motor and modelled the design of the Pneumatic subsystem. | 1.3.1 |
| PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics and computer and information sciences which underpin the engineering discipline | From the plot of knob and pressure, I noticed that the input and output were proportional to each other. | 1.3.5 |
| PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline | I noticed that lowering the reaction time below a specific threshold value causes the PID controller's return to fluctuate, requiring the user to adjust the system's optimal gain value. | 1.3.5 |
| PE1.4 Discernment of knowledge development and research directions within the engineering discipline | I went across the CAD modelling of the EPR in the solid works. | 1.3.1 |
| PE1.5 Knowledge of contextual factors impacting the engineering discipline | To obtain the desired outcome, I utilized the MATLAB Simulation versatile tool to simulate several physical systems. | 1.3.2 |
| PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline | I was involved in an effective methodology for developing a form of the process model including the parameters of the dynamic model. | 1.3.3 |
| **PE2 ENGINEERING APPLICATION ABILITY** | | |
| PE2.1 Application of established engineering methods to complex engineering problem solving | I used a DC motor in configuration with a PID controller. I arranged the operation in the time domain with a transfer functional expression. I observed that there was no heat dissipation delay while simulating the DC power. Using the PID pass function, I discovered the low overshoot. As a consequence, a solution with a high level of efficiency in integrated control action was created. As a result, the issue of DC motor energy dissipation and inefficiencies was overcome. | 1.4 |
| PE2.2 Fluent application of engineering techniques, tools and resources | For determining the setpoint and calculating the pressure drop, I employed several cylinders. | 1.3.2 |
| PE2.3 Application of systematic engineering synthesis and design processes | I implemented the manual tuning methodology considering the tuning parameter of the derivative gain, Integral & proportional gain. | 1.3.3 |
| PE2.4 Application of systematic approaches to the conduct and management of engineering projects | I implemented the PID (Proportional Integral Derivative) controller to control the rotation of the DC motor. | 1.3.2 |
| **PE3 PROFESSIONAL AND PERSONAL ATTRIBUTES (this is the section of managerial information for enhancing the technical work)** | | |
| PE3.1 Ethical conduct and professional accountability |  |  |
| PE3.2 Effective oral and written communication in professional and lay domains | In addition, I discussed the problems with the supervisor to resolve the issues. I organized meetings with the team member along with the supervisor on a weekly basis to get an update regarding the project. | 1.6 |
| PE3.3 Creative innovative and proactive demeanour | I designed a reliable way to control the speed of DC motors. To simulate the DC motor model with a PID controller, I used a discrete model. For work validation, I have created loading apps with different criteria. I was able to draw up a modern control scheme for the development of DC motors in the field. | 1.5 |
| PE3.4 Professional use and management of information | I accumulated research articles and journals online that were necessary for this project. Then I divided the project evenly and assigned it to all team members to complete within a certain time frame. | 1.6 |
| PE3.5 Orderly management of self, and professional conduct | I conducted seminars to aware people of the real-life application for the project. Finally, I passed the completed file to the department. | 1.6 |
| PE3.6 Effective team membership and team leadership | My managerial abilities and capacity to accomplish tasks on schedule increased. In addition, I increased the software's capability and created a control word for a simulated model. | 1.8.2 |