Predictive Analytics 1

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| **Use Case Number** | PAA1 | |
| **Use Case Name** | Connect to history of loading database | |
| **Actor(s)** | Prediction Algorithm (Data mining) using Decision Trees based on C4.5 algorithm | |
| **Basic Flow** | Prediction Algorithm (Data mining) |  |
| **Step 1:** Connects to the history of loading database of the faculty member. |  |
| **Alternate Flow** | At Step 1: if the module can’t connect to the database will display error |  |
| **Precondition** | Program head goes to the predictive analytics module | |
| **Post condition** | The system could generate the predictive statistics report. | |
| **Special Requirements** | The data that will be supplied for the values must be correct. | |

Predictive Analytics 2

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| **Use Case Number** | PAA2 | |
| **Use Case Name** | The algorithm will do decision nodes employ tests over a single attribute. | |
| **Actor(s)** | Prediction Algorithm (Data mining) using Decision Trees based on C4.5 algorithm | |
| **Basic Flow** | Prediction Algorithm (Data mining) |  |
| **Step 1:** Get the Attribute with the highest informational gain.  **Step 2:** Get the specialization attribute in which will be split into decision nodes |  |
| **Alternate Flow** |  |  |
| **Precondition** | A faculty should have history of loads to be able to process | |
| **Post condition** | The system could generate the predictive statistics report. | |
| **Special Requirements** | The data that will be supplied for the values must be correct. | |

Predictive Analytics 3

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| **Use Case Number** | PAA3 | |
| **Use Case Name** | Splitting of attributes stops when every subset is a pure subset. | |
| **Actor(s)** | Prediction Algorithm (Data mining) using Decision Trees based on C4.5 algorithm | |
| **Basic Flow** | Prediction Algorithm (Data mining) |  |
| **Step 1:** Split the Specialization attribute into subsets. (Kinds of specializations). |  |
| **Alternate Flow** | At Step 1: if the specialization has only one value in the history of loads the algorithm will choose a different attribute to split. |  |
| **Precondition** | A faculty should have history of loads to be able to process | |
| **Post condition** | The system could generate the predictive statistics report. | |
| **Special Requirements** | The data that will be supplied for the values must be correct. | |

Predictive Analytics 4

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| **Use Case Number** | PAA4 | |
| **Use Case Name** | Continuous splitting when the subset is not pure. | |
| **Actor(s)** | Prediction Algorithm (Data mining) using Decision Trees based on C4.5 algorithm | |
| **Basic Flow** | Prediction Algorithm (Data mining) |  |
| **Step 1:** The algorithm will split a subset (Criteria of a faculty) further if it’s not pure. |  |
| **Alternate Flow** | At Step 1: The splitting will stop if a subset (Criteria of a faculty) is pure |  |
| **Precondition** | A faculty should have history of loads to be able to process | |
| **Post condition** | The system could generate the predictive statistics report. | |
| **Special Requirements** | The data that will be supplied for the values must be correct. | |

Predictive Analytics 5

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| **Use Case Number** | PAA5 | |
| **Use Case Name** | Getting the output of the algorithm to predict. | |
| **Actor(s)** | Prediction Algorithm (Data mining) using Decision Trees based on C4.5 algorithm | |
| **Basic Flow** | Prediction Algorithm (Data mining) | Predictive Analytics Module |
| **Step 1:** Get the output of the algorithm that shows in which criteria’s values the faculty will have a load |  |
| **Alternate Flow** |  |  |
| **Precondition** | All the subsets are pure. | |
| **Post condition** | The system could generate the predictive statistics report. | |
| **Special Requirements** | The data that will be supplied for the values must be correct. | |

Predictive Analytics 6

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| **Use Case Number** | PAA6 | |
| **Use Case Name** | Comparing of results to the present criterions of a faculty | |
| **Actor(s)** | Prediction Algorithm (Data mining) using Decision Trees based on C4.5 algorithm | |
| **Basic Flow** | Prediction Algorithm (Data mining) | Predictive Analytics Module |
|  | **Step 1:** The module will now compare the predictive output, to the present values of each criteria, to be able to know if the faculty will have a load. |
| **Alternate Flow** |  |  |
| **Precondition** | If the algorithm is done in doing the data mining | |
| **Post condition** | The system could generate the predictive statistics report. | |
| **Special Requirements** | The data that will be supplied for the values must be correct. | |

Predictive Analytics 6

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| **Use Case Number** | PAA7 | |
| **Use Case Name** | The predictive analytics module will output the result | |
| **Actor(s)** | Prediction Algorithm (Data mining) using Decision Trees based on C4.5 algorithm and Predictive analytics module | |
| **Basic Flow** | Prediction Algorithm (Data mining) | Predictive Analytics Module |
| **Step 1:** Get the compared data to asses | **Step2:** The Module will suggest if the faculty has the probability to have that load |
| **Alternate Flow** |  |  |
| **Precondition** | All the subsets are pure. | |
| **Post condition** | The system could generate the predictive statistics report. | |
| **Special Requirements** | The data that will be supplied for the values must be correct. | |