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| **ID No.** | **Requirement Summary** |
| R001 | Bluetooth connection with Hardware can be tested within the application |
| R002 | When the user does something “wrong” the application notifies them of what they did and how to correct it. |
| R003 | A freefall experiment is available to view acceleration of a falling object |
| R004 | A freefall experiment is available to view speed of a falling object |
| R005 | A freefall experiment is available to view position of a falling object |
| R006 | A freefall experiment poses questions to students about free fall |
| R007 | A freefall experiment explains a procedure for users to follow within the app |
| R008 | The experimental data can be viewed during the experiment. |
| R009 | There’s an option to report issues or give feedback on the application |
| R010 | As data is collected a graph is shown so users can associate data with the plots |
| R011 | If more analysis is required a table of taken data can be viewed by user after data completion |
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| R012 | A hardware device provides acceleration data to the application |
| R013 | The hardware can be inserted into a ball and tossed around without breaking. |
| R014 | The hardware device can be used with common physics tools such as carts and springs. |
| R015 | The system has room and is modifiable to include more features later on . |
| R016 | The Hardware device is powered so that either batteries can be changed or recharged easily. |
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| R017 | The system is “understandable” for a physics student. |
| R018 | The application operates for a full experiment without crashing. |
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| USE-1 | After initial installation, the SW shall always be usable by the user, regardless of internet connection. |
| PE-1 | System will remain operable without internet connection |
| PE-2 | Any information requested from databases or tickets sent to CS shall be stored until a connection is reestablished |
| SE-1 | No Personal information shall be accessed or stored by the application |
| SAF-1 | The HW system shall not function if it is not in safe condition |
| ROB-1: | Should the application crash all taken data should be erased and the user returned to the main page with notification |
| ROB-1.1; | If any crash should occur the user should be given the option to submit a feedback report with fillable information |
| MOD-1: | The application should be modifiable to accept further experiments with the same equipment. |
| MOD-2: | The hardware should be modifiable to integrate more experiments later. |

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| **ID** | **Type** | **Description** |
| TS001 | Component | Android App Component Tests |
| TS002 | Component | Arduino Hardware Component Tests |
| TS003 | Integration | Android App Integration Tests |
| TS004 | Integration | Arduino Hardware Integration Tests |
| TS005 | Integration | System Integration Tests |
| TS006 | Component | Android App Acceptance Tests |
| TS007 | Component | Arduino Hardware Acceptance Tests |
| TS008 | Integration | System Acceptance Tests |
| TS009 | Integration | Arduino System Interfaces |