Please note that these requirements are specific to the FHSS college. The requirements for departments within FHSS may still vary. If the department and college requirements differ you will need to work with them to resolve it. FHSS does not have different requirements than the other colleges for the title page. To access the title page example use the “Sample Title Page” link on GradProg.

All text is typed in the same font and size as the rest of the paper. Font should be serif. There should be 1” margins on all 4 sides of the page.

The word “ABSTRACT” (capitalized and bolded) should begin one inch from the top edge of the page. A single spaced blank line should follow.

The title of your work on the abstract should match the title of your work on the title page (inverted pyramid format) with the exception of being single spaced on the abstract.

After a single spaced blank line, type your name (as it appears in the separated boxes in the publication details with appropriate punctuation). On the next line type the title of your department followed by “, Brigham Young University”, and then on the next line type the full name of your degree (all single spaced). Center this section.

After a single spaced blank line, begin the double spaced body of the abstract. The paragraphs are not indented and are left-aligned. There is not a space in between paragraphs.

All students should ensure that the keywords are listed at the bottom of the abstract and that they are left aligned. The “k” in “keywords” is capitalized. Only keywords that are proper nouns are capitalized.

Keywords: mental health, senior citizens, therapeutic alliances
Please note that these requirements are specific to the FHSS college. The requirements for departments within FHSS may still vary.
If the department and college requirements differ you will need to work with them to resolve it.

ACKNOWLEDGEMENTS

This page is optional. Students may use the acknowledgments page to express appreciation for the committee members, friends, or family who provided assistance in research, writing, or technical aspects of the dissertation, thesis, or selected project. Acknowledgments should be simple and in good taste.

This is where a second paragraph begins if applicable.
Please note that these requirements are specific to the FHSS college. The requirements for departments within FHSS may still vary. If the department and college requirements differ you will need to work with them to resolve it.

### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE PAGE</td>
<td>i</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vii</td>
</tr>
</tbody>
</table>

Outcomes and Therapeutic Alliances in Senior Citizens

Served in a Community Mental Health Setting ............................1

HydroShare Hydrologic and GeoSpatial Data Services ..................9

Data Services Framework .................................................9

Data Services Implementation ...........................................11

HydroShare Web Services Manager .......................................18

Web Services Manager Design ...........................................18

Web Services Manager Implementation ..................................20

GeoServer ...........................................................................21

GeoServer Background .....................................................21

GeoServer Implementation ..................................................22

Water Data Server ..................................................................22
Please note that these requirements are specific to the FHSS college. The requirements for departments within FHSS may still vary. If the department and college requirements differ you will need to work with them to resolve it.

Applications and Use Cases........................................................................................................38

Geographic Information System Interoperability........................................................................38

Jupyter Notebook ..........................................................................................................................41

HydroShare Jupyter Notebook Server..........................................................................................41

Time Series Data Viewer Notebook.............................................................................................42

HydroShare Data Viewer App ........................................................................................................44

Previous Work: HydroShare GIS and the Data Series Viewer .................................................44

HydroShare Data Viewer Design..................................................................................................45

HydroShare Time Series Manager App .........................................................................................49

Conclusion ......................................................................................................................................52

References......................................................................................................................................54

Appendix A. HydroShare Data Services Installation.................................................................58

Web Services Manager Installation...............................................................................................58

GeoServer Installation..................................................................................................................59

Water Data Server Installation......................................................................................................60

Appendix B. Application User Documentation..............................................................................62

HydroShare Data Viewer User Instructions..................................................................................62

HydroShare Time Series Manager User Instructions......................................................................63
LIST OF FIGURES

Figure 1-1: Depth to Water Table at Well 374134113085901 near Cedar City, UT ......................................................... 3

Figure 2-1: View of Utah Aquifers in Groundwater Level Mapping Tool ................................................................. 8

Figure 2-2: Time Series View in Groundwater Level Mapping Tool ................................................................. 9

Figure 2-3: Depth to Water Table in Beryl-Enterprise Aquifer in December, 1949 ......................................................... 10

Figure 2-4: Depth to Water Table in Beryl-Enterprise Aquifer in December, 2014 ......................................................... 10

Figure 2-5: Drawdown from December, 1944 to 2014 in Beryl-Enterprise Aquifer ......................................................... 11

Figure 2-6: Aquifer Storage Curve for Beryl-Enterprise Aquifer ................................................................. 11

Figure 2-7: Inconsistent Sampling Rate at Well 374248113075201 near Cedar City, UT ......................................................... 12

Figure 2-8: Example PCHIP Interpolation ......................................................... 13

Figure 2-9: Resampled Values Obtained from PCHIP Interpolation ......................................................... 14

Figure 2-10: Correlation between Wells in the Cedar Valley Aquifer ......................................................... 15
Please note that these requirements are specific to the FHSS college. The requirements for departments within FHSS may still vary. If the department and college requirements differ you will need to work with them to resolve it.

All text is typed in the same font and size as the rest of the work. There should be 1" margins on all 4 sides of the page.

Should all be double spaced and include links to the correct pages in the document.

Should have a page number flush right at the top of the page written as a roman numeral.

Student’s list of tables may be formatted differently than this sample. That is acceptable as long as formatting remains consistent throughout the table of contents, list of tables, and list of figures. Formatting should also still meet the requirements discussed above.

If there is also a preface, it should follow the same formatting requirements as the rest of the document and should be placed before the introduction and after the list of figure/tables.

LIST OF TABLES

Table 3-1: RMSE Values for Time Series Prediction for Ten Wells in Cedar Valley Aquifer................................................. 48

Table 3-2: Error Values for MLR Estimate Compared to Kriging Estimate for Ten Wells in Cedar Valley Aquifer ..............................49

Table 3-3: Map IDs for 5 Wells Wells in Cedar Valley Aquifer.................................................................................. 50

Table 3-4: RMSE Values for ELM Time Series Prediction for Five Wells in Cedar Valley Aquifer................................. 55

Table 3-5: NRMSE Values for ELM Time Series Prediction for Five Wells in Cedar Valley Aquifer................................. 55

Table 3-6: NRMSE Values for ELM Time Series Prediction for Ten Wells in Beryl Enterprise Aquifer .................................59

Table 3-7: NRMSE Values for Time Series Models in the Ogallala Aquifer................................................................. 68

Table 3-8: Mean and Median Absolute Percent Error for 417 Wells in the Ogallala Aquifer ................................. 72
Please note that these requirements are specific to the FHSS college. The requirements for departments within FHSS may still vary. If the department and college requirements differ you will need to work with them to resolve it.

Outcomes and Therapeutic Alliances in Senior

Citizens Served in a Community

Mental Health Setting
Please note that these requirements are specific to the FHSS college. The requirements for departments within FHSS may still vary. If the department and college requirements differ you will need to work with them to resolve it.

References

Citations should be typed in this section with hyperlinks and should adhere to the most current relevant style guidelines the student is using.