Worksheet to Calculate Shelving Layout and Growth Rates

The Layout spreadsheet contains tabs for four separate kinds of Excel spreadsheets:

The Data tab is a form you can print out and use to record the measurements of the shelves using the shelves-and-strings process. You do not enter any data in the electronic version of this worksheet. The instructions on the sheet are set up for a relatively large Dewey-classified collection. You may need to modify the specific instructions to match your own collection.

There is one Master Layout tab and fifteen copies, marked Sheet 1, Sheet 2, etc. Use one copy for each of your collections. Rename the Sheet tabs to identify each of your collections. At the same time, enter the name of the collection in cell B30 so it shows on the printed copies of the sheet. In a large library with many collections, you need additional copies.

Enter the information you have recorded on the Data sheet into the appropriate sheet, which you use to calculate growth, waypoints, and shelving layouts. Each copy also contains a section that calculates an exact count of the shelving assigned to each collection.

There is a tab customized to calculate Periodicals layouts.
There is a tab customized for Microforms.

In some instances you use one of the Sheet tabs for periodicals or microforms, depending on how you measured those collections.

Each of the spreadsheets is protected using Excel's internal Protect function. The cells in which you enter information are unlocked; the rest are not readily accessible. This is to prevent an accidental erasure or loss of a formula.

You can remove the protection. There is no password. Click on the tab you want to unprotect. Click Tools, then Protection, then Unprotect Sheet. You must remove the protection if you add columns to interfile four or more collections. I strongly recommend you reinstall protection as soon as possible. One corrupted formula can render your entire shelving plan inaccurate and might require you to shift your entire collection.

To reset protection, click on the tab you want to protect. Click Tools, then Protection, then Protect Sheet. In the drop-down box check “Select unlocked cells,” “Format columns,” and “Insert columns.” Those functions are necessary if you add columns for interfiling or for data entry.
To interfile four or more collections, add two new columns for each additional interfiled collection.

Click on the tab you want to adjust.

Beginning at column I and, moving right, highlight two columns for every additional collection—Insert/Columns.

Label the new pairs of columns “Shelves” and “Strings” to match the three sets I provided.

Adjust the formula in column I. Note that the original column I now has a new letter designation, depending on how many columns you added. For consistency, I continue to refer to it as column I.

Unprotect the worksheet—Tools/Protection/Unprotect Sheet.

Go to cell I34, or whatever its new designation may be.

The formula in this cell has two main elements. The first is (G34+E34+C34).

Add the cell references to the new “Shelves” columns. They should be columns I, K, M, O, etc. If you added one more set of columns, the adjusted first element now reads (G34+E34+C34+I34).

Add the cell references to the second element (D34+F34+H34+???).

Protect the worksheet—Tools/Protection/Protect Sheet.

Note: If you are expanding the Periodicals or Microforms tab, the formulas are slightly different in both elements. Follow the formulas as they are shown on those tabs.

For Books and for Periodicals or Microforms Measured as Books in Shelves and Strings

Enter measurements from the Data sheet

Click on the tab for the collection you are going to enter.

Starting at cell B34, enter the call number at each waypoint and the number of shelves and strings counted for each. You can have up to two hundred waypoints on each tab. Two hundred
should be sufficient for up to 500,000 books in the main run. If you need additional waypoints for a very large collection, break it into parts and calculate each part on a separate tab.

☐ If you are interfiling into this collection, enter the shelves and strings for those collections in the appropriate pair of columns. Remember that you used the same waypoints for all of the interfiled collections.

☐ If you were unable to measure a collection, enter the estimated total length, in feet, in cell C17.

Determine the growth factor

☐ If you want to distribute growth evenly over the whole collection, skip this step. Otherwise work with each collection separately. Decide what growth applies to the materials in each waypoint. Rate each waypoint on a scale from 1 to 5: 3 is average growth; 1 is 25 percent slower than average; 2 is 10 percent slower; 4 is 10 percent faster than average; 5 is 25 percent faster.

☐ Click on the tab for the collection you want to adjust.

☐ Enter the growth factor for each waypoint in column J. 3 is the default.

Determine how many shelves you have available

☐ Count the number of shelves on each side of each range, in the order in which you will shelve the materials. A detailed explanation of this process is illustrated in chapter 4.

☐ Enter the data, range by range, on the tab for which the shelving is assigned. This data entry section is to the right of the growth calculation section.

☐ Enter the numbers of sections and the shelves per section for each range. If some shelves are missing or are to be left unused, enter the number of such shelves as a negative number in column R. If there are extra shelves, enter that number as a positive number in column R.

☐ Do this for all, and only, shelves assigned to this collection.

Determine the actual growth for each shelf

☐ Measure an average shelf and enter the length in cell C19. The default is 35.5 inches, the actual capacity of a standard 3-foot cantilever shelf.

☐ Make sure you have assigned enough shelves: Compare cell O19 to cell O20. If the number in cell O20 is larger than the one in O19, proceed. If O19 is larger, you need to allocate more shelves to this collection.

☐ Enter a number greater than 1.0 in cell C23. Cell O19 changes. If cell O19 is still smaller than cell O20, try a larger number (in the form 1.XXX) in C23. If O19 is larger than O20, try a smaller number. You may have to enter a number out to several decimals to get an exact match.

This whole process may seem complex, but it can be very fast once you have detailed waypoint and shelf count information entered. On one of my moves, we had already loaded the first carts of a 10,000-volume periodicals collection when the powers-that-be decided to remove one entire range. We zeroed out that range in the shelf counting section, tried a smaller growth factor, calculated new waypoints, printed out new waypoint markers, and remarked the shelves. It took less than half an hour. Once you have the data set up, you can make major changes with only a few keystrokes.

For Periodicals Measured Title by Title in Feet and Inches

If your shelving is tight and you measured your periodicals so as to assign growth at the ends of open titles, use the Periodicals tab. The difference between this and the Book tabs is that the Periodicals tab is calibrated in feet and inches. The instructions in chapter 4 explain how to do this measurement.

The spreadsheet allows you to calculate for up to 400 titles. If you have more than 400 titles, go to www.al.org/editions/extras/fortriede09942 and download another Layout spreadsheet. Each download includes one Periodicals tab with space for another 400 titles.

To adjust the number of columns for interfiled collections, use the instructions above.

Enter measurements from the Data sheet

☐ Click on the Periodicals tab.

☐ Starting at cell B32, enter the title or call number of each periodical, the length in feet of each title, and the growth in inches you assigned to each title. You can have up to 400 titles.

☐ If you are interfiling into this collection, first enter all of the titles in column B, then enter the measurements, in feet and inches, in the appropriate pair of columns.
The spreadsheet allows you to calculate for up to 400 titles. If you have more than 400 titles, go to www.ala.org/editions/extras/fortriede09942 and download another Layout spreadsheet. Each download includes one Microforms tab with space for another 400 titles.

To adjust the number of columns for interfiled collections, use the instructions above.

Enter measurements from the Data sheet
- Click on the Microforms tab.
- Starting at cell B32, enter the title or call number of each microform, the length in feet of each title, and the growth in inches you assigned to each title. You can have up to 400 titles.
- If you are interfiling into this collection, first enter all of the titles in column B, then enter the measurements in the appropriate pair of columns in feet and inches.
- If you were unable to measure a collection, enter the estimated total length, in feet, in cell C17.

Determine the space you have available in the new cabinets. Remember that we are treating cabinets as a range, drawers as a section, and rows as a shelf. Use the Data sheet and count the number of drawers and rows in each cabinet. Count each cabinet in separately and in the order in which you will file the microforms. A detailed explanation of this process is illustrated in chapter 14.

Enter the data, range by range, in the Periodicals tab. This data entry section is to the right of the growth calculation section. The number of sections in the range goes in column P and number of shelves per section in column Q. If some shelves are missing or are to be left unused, enter the number of such shelves as a negative number in column R. If there are extra shelves, enter that number as a positive in column R.

Do this for all, and only, shelves assigned to periodicals.

Determine the actual growth for each shelf. Even though you assigned a specific amount of growth to each title, you may have additional growth capacity available. This step distributes that growth over all of the shelves, making reshelving easier and allowing growth flexibility in the future.

Measure an average shelf and enter the length in cell C19. The default is 35.5 inches, the actual capacity of a standard 3-foot cantilever shelf.

Make sure you have assigned enough shelves: Compare cell M19 to cell M20. If the number in cell M19 is larger than the one in M20, proceed. If M20 is larger, you need to allocate more shelves to periodicals.

Enter a number greater than 1.0 in cell C22. Cell M19 changes. If cell M19 is still smaller than M20, try a larger number (in the form 1.XXX) in C22. If M19 is larger than M20, try a smaller number. You may have to enter a number out to several decimals to get an exact match.

For Microforms Measured Title by Title in Feet and Inches

If your shelving is tight and you measured your microforms so as to assign growth at the ends of open titles, use the Microforms tab. The difference between this and the book tabs is that the Microforms tab is calibrated in feet and inches. The instructions in chapter 14 explain how to do this measurement.
Make sure you have assigned enough shelves: Compare cell M19 to cell M20. If the number in cell M20 is larger than the one in M19, proceed. If M19 is larger, you need to allocate more cabinets to microforms or reduce the number of years of growth you allocate to each title.

Enter a number greater than 1.0 in cell C22. Cell M19 changes. If cell M19 is still smaller than M20, try a larger number (in the form 1.XXX) in C22. If M19 is larger than M20, try a smaller number. You may have to enter a number out to several decimals to get an exact match.

In the growth portion of the spreadsheet, you now have calculated

- The shelf number (row) on which each waypoint (title) starts.
- The number of inches of growth to leave on each shelf (row). This number varies depending on the total growth you have available and on the growth factor you assigned to each waypoint. With a tight periodical collection, all of the growth may be concentrated at the ends of the titles with nothing left on the intervening shelves.
- The “Natural Growth,” which is the actual, precisely calculated growth space. The recommended “Leave XX inches” amount is always a bit less. This deliberately makes the shelved collection a bit loose and provides just a little extra space for the reshelvers. Use the “Leave XX inches” number when you fill out the waypoint markers.
- For book collections only, cells D25 to D29 show the actual growth rate for factors more or less than the average.

In the shelf counting portion, you have

- A virtual collection map.
- The cumulative number of assigned shelves at the end of every range or each microform cabinet. Use this number to help you lay out a paper collection map.

PRINT WAYPOINT AND SHELF COUNT LISTS

When you have finished entering all of the collection measurements and shelf counts and have calculated the growth rate, and you are satisfied that everything is correct and will fit in the assigned space, you are ready to print. There are two useful printouts. One is the master list of waypoints to be used to fill out waypoint markers and collection flags and to prepare the collection map. The master list is used as a reference as questions arise during the move, so make one or two extra copies and keep them at the destination dispatch desk. The other printout is used when you mark the cumulative shelf counts on the floor plan before you make the collection map.

You will have a master list and a shelf count list for each collection tab that you used.

Click on the tab for the collection you want to print.

Unprotect the worksheet

□ Tools/Protection/Unprotect sheet

Print the master list of waypoints

□ Tools/Protection/Unprotect sheet

□ Hide columns C, D, E, F, G, H, I, and J. You do not need this information, and leaving it out allows the printout to fit on one page. Highlight these columns, then use Format/Column/Hide.

□ Highlight from A30 to O234, or as far down the sheet as you have entered data.

□ File/Print/Selection/OK.

□ Unhide columns C, D, E, F, G, H, I, and J.

Highlight columns B and L together, then use Format/Column/Unhide.

□ Hide column K. This column is used for an internal calculation to simplify a later formula. It does not display during use of the spreadsheet. Highlight column K, then use Format/Column/Hide.

Print the shelf count list

□ Hide from Q30 to V234, or as far down the sheet as you have entered data. File/Print/Selection/OK.

Reset protection on the sheet

□ Tools/Protection/Protect sheet

CREATING YOUR OWN WORKSHEETS

You can create your own worksheets instead of downloading them. Copy the text, prompts, instructions, and other printed matter as they are shown on the printouts.
Copy the formatting where it is visible. Where formatting is not obvious, and is important, it is noted below. The formulas are as follows:

**Data Tab**

There are no formulas. This is simply a printing master.

**Master Tab**

These formulas also apply to Sheets 1 through 15.

<table>
<thead>
<tr>
<th>Cell</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>B32</td>
<td>=NOW()</td>
</tr>
<tr>
<td>I34</td>
<td>$((G34+E34+C34)*$C$19)((D34+F34+H34)*12))/12</td>
</tr>
<tr>
<td>K34</td>
<td>=LOOKUP(J34,$C$25:$D$29)*I34</td>
</tr>
<tr>
<td>L34</td>
<td>=K34/$C$19*12</td>
</tr>
<tr>
<td>M34</td>
<td>1</td>
</tr>
<tr>
<td>M35</td>
<td>=M34+L34</td>
</tr>
<tr>
<td>N34</td>
<td>=INT(O34-.025)</td>
</tr>
<tr>
<td>O19</td>
<td>=SUM(L34:L234)+((C17+0000001)/3)</td>
</tr>
<tr>
<td>O20</td>
<td>=V20</td>
</tr>
<tr>
<td>O30</td>
<td>=B30</td>
</tr>
<tr>
<td>O34</td>
<td>$((L34*$C$19)-(I34<em>12))/($L34</em>$C$19)</td>
</tr>
<tr>
<td>U34</td>
<td>=R34*S34+T34</td>
</tr>
<tr>
<td>V20</td>
<td>=MAX(V34:V234)</td>
</tr>
<tr>
<td>V34</td>
<td>=U34</td>
</tr>
<tr>
<td>V35</td>
<td>=V35+U34</td>
</tr>
</tbody>
</table>

Lock all of the formulas and protect the worksheet.

**Periodicals Tab and Microforms Tab**

<table>
<thead>
<tr>
<th>Cell</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>B28</td>
<td>Periodicals (or Microforms)</td>
</tr>
<tr>
<td>B30</td>
<td>=NOW()</td>
</tr>
<tr>
<td>I29</td>
<td>=SUM(I32:I432)</td>
</tr>
<tr>
<td>I32</td>
<td>$(((G32+E32+C32)*12)-((D32+F32+H32)*12))/$C$19</td>
</tr>
<tr>
<td>J</td>
<td>Hide to I432</td>
</tr>
<tr>
<td>K32</td>
<td>1</td>
</tr>
<tr>
<td>K33</td>
<td>=K32+I32</td>
</tr>
<tr>
<td>L32</td>
<td>=INT(M32-0.25)</td>
</tr>
<tr>
<td>M19</td>
<td>=I29*$C$22</td>
</tr>
<tr>
<td>M20</td>
<td>=T20</td>
</tr>
<tr>
<td>M32</td>
<td>=($C$22-0.9999999)*$C$19</td>
</tr>
<tr>
<td>O28</td>
<td>=B28</td>
</tr>
<tr>
<td>S32</td>
<td>=P32*Q32+R32</td>
</tr>
<tr>
<td>T20</td>
<td>=MAX(T32:T232)</td>
</tr>
<tr>
<td>T32</td>
<td>=S32</td>
</tr>
<tr>
<td>T33</td>
<td>=T32+S33</td>
</tr>
</tbody>
</table>

From MOVING YOUR LIBRARY, by Steven Carl Fortriede (Chicago: American Library Association, 2009)