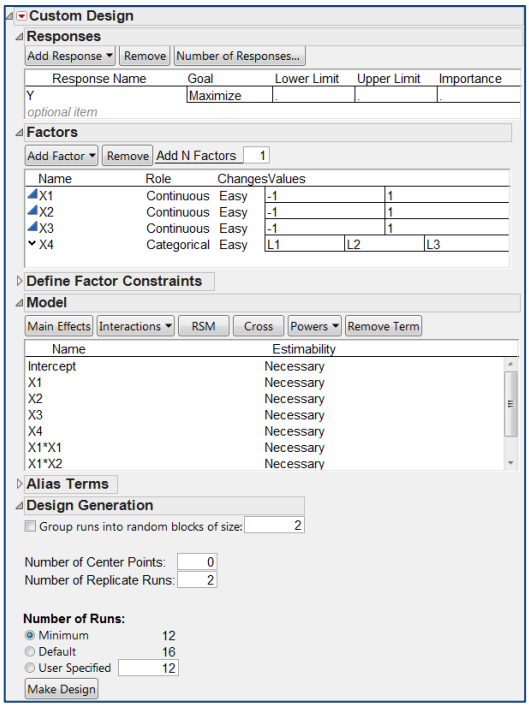
DOE - Custom Designs

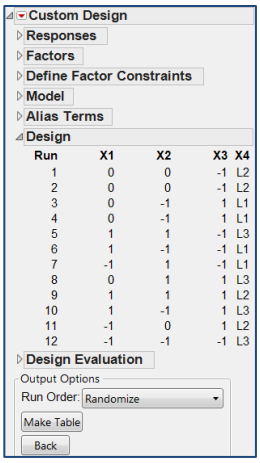
This page provides information on designing optimal experiments using the flexible Custom Design platform. The Custom Designer can be used for almost any experimental situation, including factor screening, optimization, and mixture problems, and can accommodate designs with hard-to-change factors and other constraints.

DOE: Generating A Custom Design



1. Select **DOE > Custom Design**.
2. Under **Responses**, specify the response(s):
   - Double-click to rename the response (default is **Y**).
   - Change the response goal (default is **Maximize**).
   - Click **Add Response** to add additional responses.
3. Under **Factors**, specify the experimental factors:
   - Click **Add Factor**, and select the factor type and number of levels. To add several factors of the same type and number of levels use **Add N Factors** (enter a number) and click **Add Factor**.
   - Double-click to rename the factors.
   - Change the factor values (the experimental settings).
   - Change "Easy" under **Changes** to "Hard" or "Very Hard" to generate a split-plot or split-split plot design.
4. Click **Continue**.
5. Under **Model**, specify the statistical model to be estimated:
   - To add all **interaction** or **power** terms up to a given degree, click the corresponding button.
   - To add terms needed to perform a response surface analysis, click **RSM** (or **Scheffe Cubic** for mixture designs).
   - To add specific interaction or power terms, highlight one or more factors under **Factors** and click **Interactions** or **Powers**.
   - To remove a term, highlight it and click **Remove Term**.
   - To reduce the number of runs needed (at the expense of effect aliasing), click "Necessary" for a term (under **Estimability**) and change to "If Possible."
6. Under **Design Generation**, fine-tune the design (as needed):
   - Specify the **block size** or number of **whole plots** (with "Hard" to change factors).
   - Enter the **Number of Center Points** and/or **Number of Replicate Runs**.
   - Select (or specify) the desired **number of runs**.
7. Click **Make Design.** The resulting design displays under **Design**.
8. Select the desired **Run Order**, then click **Make Table** to generate the design table (or **Back**) to make changes.

   Model, **Evaluate Design** and **DOE Dialog** scripts are saved to the data table (top left), and the design specification window stays open to change or regenerate the design if needed.



Notes: For more options, including optimality settings and other advanced options, click the **red triangle** next to **Custom Design**. The **Design Evaluation** panel houses a variety of diagnostics. For more information on creating and evaluating custom designs, see the "Custom Design" chapter of the ***Design of Experiments Guide*** (under **Help > Books**).