The Final Exam will not be divided into sections like the Mid-term. Most of these concepts and skills will mixed together in questions that require you to use several at once.

## Concepts/definitions

* Safety factor/design factor
  + Know common minimum DFs
  + Convert DFs
* Working load limit
* The 4 Ks

## Mechanical Advantage

* Actual mechanical advantage
* Theoretical mechanical advantage
* Calculate lead line pull

## Specifying components

* Choose appropriate design factors
* Choose appropriate ropes, cables and terminations
* Choose hardware with adequate working load limits and design factors
* Identify parts of common rigging systems

## Estimate Weights

* Estimate weights based on descriptions of systems
* Look up weights of objects in Backstage Handbook or Truss tables

## Calculate reactions/loads on hanging points

* Draw a free body diagram
* Calculate reactions
* Look up loading characteristics for evenly distributed loads

## Calculate bridle lengths and loads

## Practical skills

* Tie knots (timed, no notes or reference)
  + You must tie two knots of your choice from this list, and two knots of my choice: bowline, clove hitch, figure eight, lark’s head, double-fisherman’s knot, square knot, butterfly knot
  + You will earn bonus points for each additional knot that you tie
* Assemble hardware correctly (attach a trim chain to a pipe, rig slings to a hoist, hang truss, etc.)