

# Ultimate Challenge

## Expanding and Replacing our Engineering and Design Capabilities

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# Ultimate Challenge

## Russell Rhinehart – Biography

Russ is the head of the School of Chemical Engineering at Oklahoma State University.

He holds a BS in Chemical Engineering and MS in Nuclear Engineering from the U of Maryland, and a PhD in Chemical Engineering from North Carolina State University.

Russ spent 12 years at Texas Tech University before moving to OSU ( 9 years); also spent 13 years in Engineering industry in various positions.



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# Faculty Expertise

- Hires driven by research funding – bio (from- or for-life chemicals) nano, info, mathematics
  - 1997 2/3 of OSU funding from OK State. Today 1/3.
  - Promise of structured assembly of molecules
- Hires driven by “top-10” stature
  - Academic - mathematical complexity within isolated environment
    - papers
  - Practice – K.I.S.S. within a complex environment
- Equipment, Safety, Design, RCRA, Fugitive Emissions, ..... GOING, GOING, GONE
- Design is a faculty burden

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# Bio/Pharma Student Attraction

- **Bio promise and excitement**
  - New and promising frontier to make a difference
  - 40% of OSU ChEs are in bio option
  - 50% of ChE Departments nationally have included bio, molecular, etc. in their name.
  - CSI (NYC, Miami, Las Vegas)
- **Design**
  - Dilbert

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# Capstone Turn-Off

- Design is a hard course
- All-Nighters
- Month-long projects – no instant gratification
- Unachievable perfection
  - Complex
    - Teams, Writing, Relearn every forgotten thing, Software aggravation
  - Comprehensive
    - Safety, Economics, Reliability, Loss Prevention, Turn-up/down, etc.

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# Student Comfort to Company

- Allegiance, Awareness, Familiarity
- Career Opportunities
- Actualization – test new skills, add to goodness
- Braggable features – company and job
- Team, collective joy of activity

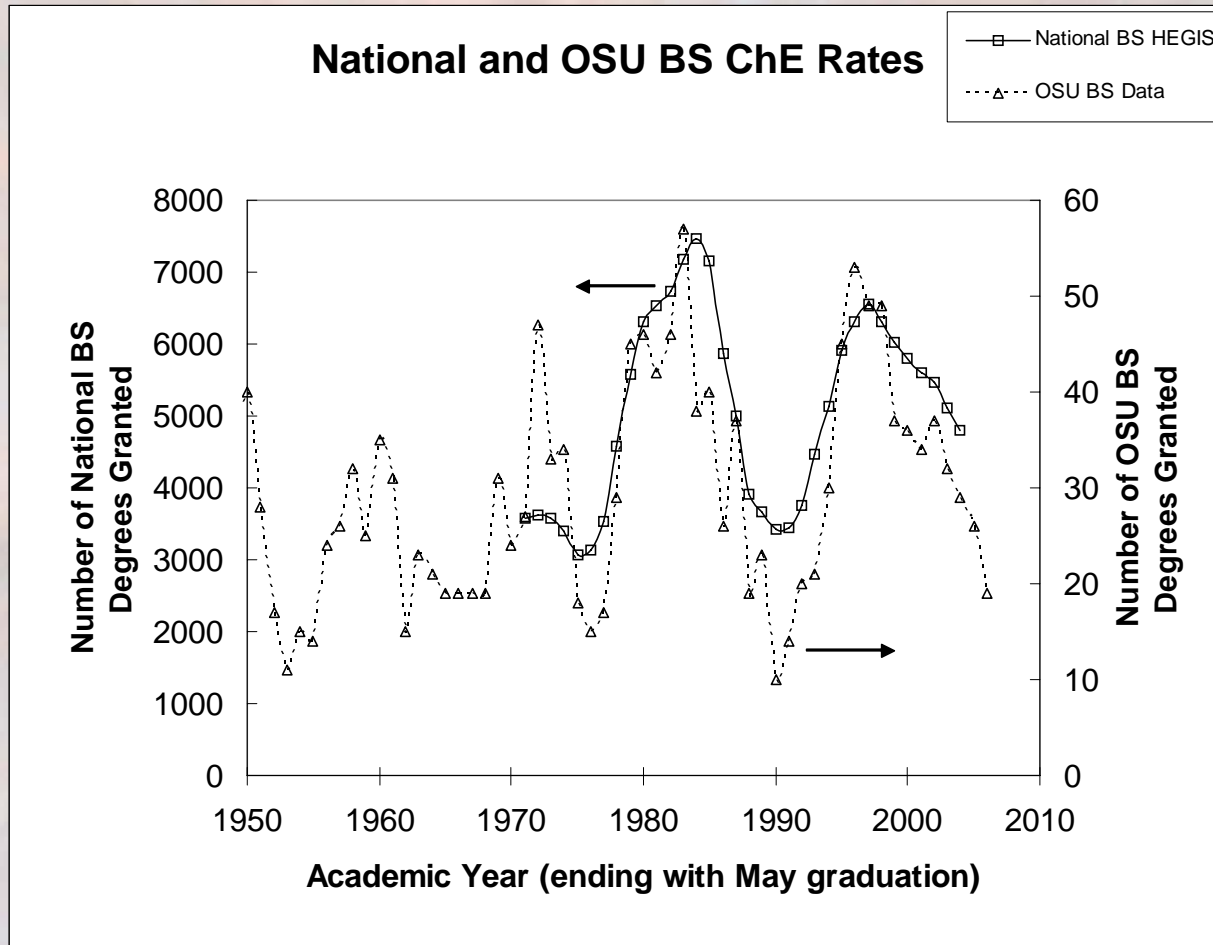
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# BS ChE Supply Cycling



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# Solutions

- **Faculty Expertise**
  - Industry engineers help in classroom – relevant problems, integration, feedback on student work.
  - Corporate leaders shape Legislature understanding
- **Bio Attraction**
  - Market the challenge of design,
  - Contribution through design,
  - Continued technical and career growth through design
- **Design Course**
  - Industry participate with energy and enthusiasm
- **Today's ChE People Supply**
  - Hire MS ChEs and BS Chemists and MEs
  - Invest in on-the-job training.
- **Student Comfort**
  - Sustained activity - Field trips, evening seminars, event sponsorship, summer interns

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