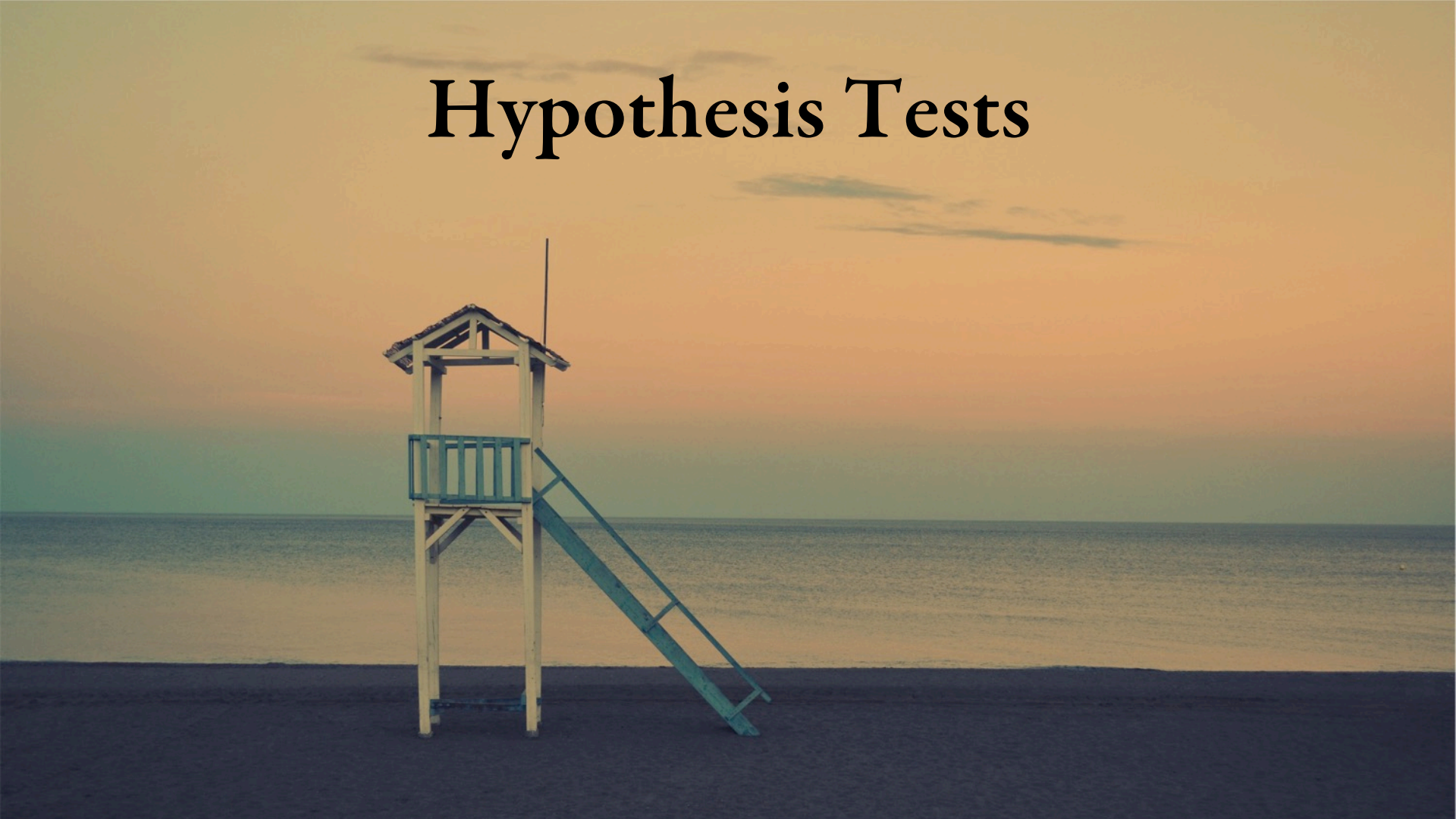
ASQ CRE Prep course

Lesson III. A. 7. b.

Design of Experiments

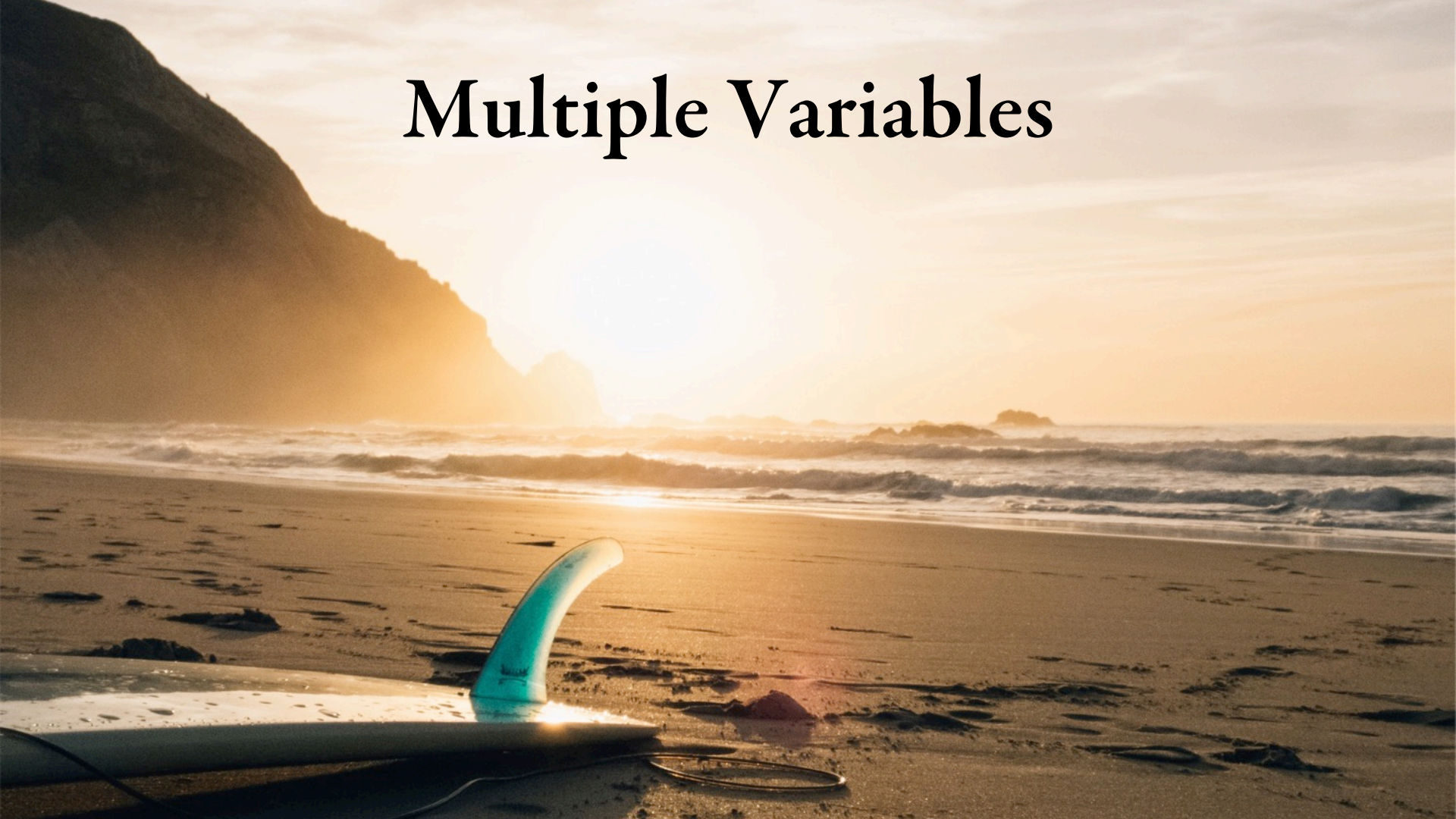
Differences & Approaches

Hypothesis Tests

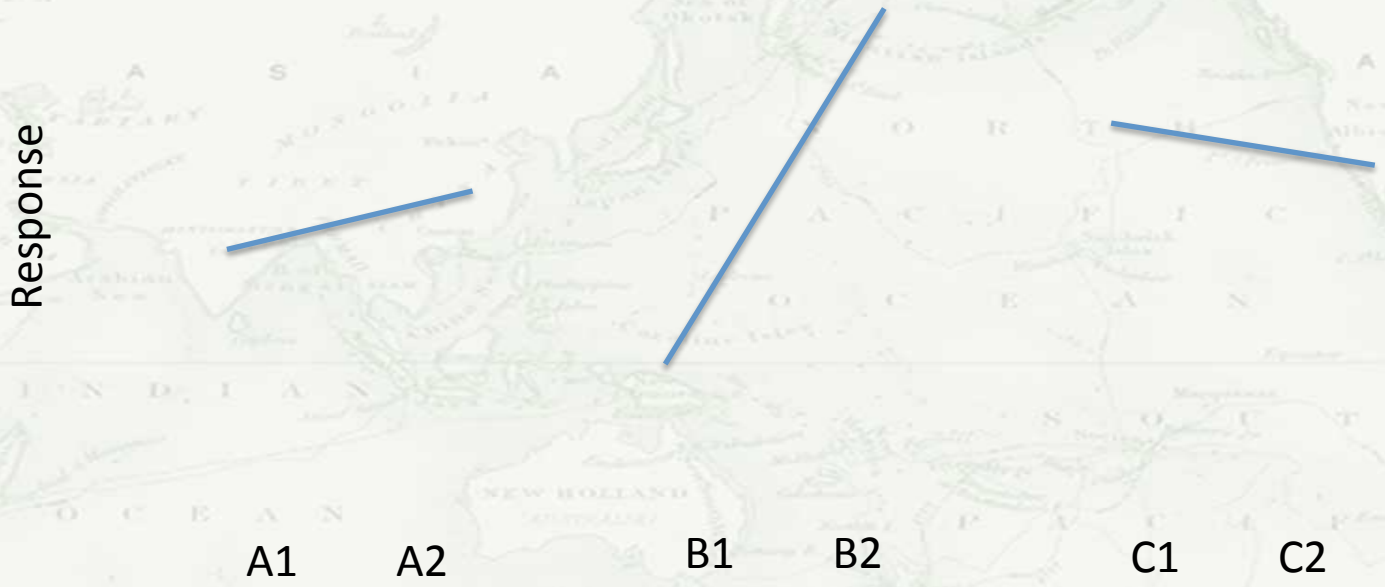


Regression Analysis

Multiple Variables



What is important?



Types of Designed Experiments

Traditional

- **Trial and Error**
- **Special Lots**
- **Pilot Runs**
- **Error of measurement**
- **Simple comparison of two factors**

DOE

- **Interaction among many factors**
- **Using a comprehensive experimental plan**
- **The experimentation order is randomized, so the main effects are not confused**

Types of DOE approaches

Classical

- “+” & “-”
- **Statistically rigorous**
- **Focus on interactions**
- **Emphasize optimum results**
- **Statisticians**
- **Attempt to control more factors**

Taguchi

- “1” & “2”
- **Less rigorous**
- **Focus on main effects**
- **Emphasize quick data collection**
- **Engineers**
- **Account for uncontrolled factors**

Types of DOE approaches

Classical preferred

- **cost of experiment is high**
- **Time required is long**
- **limited options to iteration**

Taguchi preferred

- **Many uncontrollable factors**
- **Need for quick results**
- **Possible to iterate the experiment**

Questions

ASQ CRE Prep course

Lesson III. A. 7. c.

Design of Experiments

Language of DOE