

3.8.2020

MARCH

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Friday

7	1	2	3	4	5	6
14	8	9	10	11	12	13
21	15	16	17	18	19	20
28	22	23	24	25	26	27
M	T	W	T	F	S	S

## BEHAVIORAL METHODS & EXPERIMENTAL DESIGN

### TAUGHT BY

- prof. vinoo alluri
- prof. bapi raju S

### COURSE TOPICS

#### 1. introduction to research methods

- qualitative & quantitative approaches
- conducting behavioral research
- ethics in research
- institute review board (IRB) process

#### 2. Starting on research, experimental design

- hypothesis testing
- type I and II errors
- hypothesis-based vs. exploratory based

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Saturday

081-284 • WK 12

## BRIDGE DESIGN IN BUILDING?

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FEBRUARY 2014

- operationalizing research

- literature review

- sampling

- types of variables and levels of measurements

- designing an experiment

- Validity, reliability, and cross-validation.

### 3. types of experimental design:

- non-experimental designs

- pilot testing

- data collection

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Sunday

surveys, questionnaires

- data representation

- levels of measurement

- human annotation

- different types of design

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Monday

WK 13 • 083-282

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- simple randomized design
- factorial designs
- simple repeated measures design
- randomized blocks design
- latin square type designs
- between subject and within-subject factors in an experiment
- scaling behavioural experiments
- web and mobile experiments
- crowdsourcing
- big data
- large-scale experiments
- citizen science
- online data collection (PsiTurk, MechanicalTurk, etc.)

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Tuesday

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#### 4. data visualization and analysis

- descriptive statistics
- tests of normality and data transformation
- outliers
- collinearity in data
- data summarization vs data reduction techniques
- exploratory factor analysis
- principal component analysis
- discriminant factor analysis

#### 5. introduction to Statistical analysis

- inferential statistics
- tests of difference
- tests of association
- multi-level tests (ANOVA)



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Wednesday

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## • non-parametric & parametric tests of difference

• Chi-square test

• mann whitney U test

• binomial sign test

• wilcoxon's T test

• related and unrelated T tests

• non-parametric & parametric tests of association

• correlation

• regression

• significance testing

## 6. Communicating & assessing research:

- writing, poster, and general presentations  
(formatting of the research paper using APA and IEEE journal / conference formats)

Interest in conducting behavioural experiments is desirable.  
open only for DD, MS, and PhD students. BTech and MTech students can be admitted based on specific requirements and instructor permission.

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Thursday

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## TEXT BOOKS

- statistical methods for psychology (1997)
- exploring research (2009)
- methods in behavioural research (2011)
- research methods & statistics in psychology (2014)
- research methods: concepts & connections (2017)