

CCN Subcommittee Report & Recommendation(s)

Statistics Workgroup

Subcommittee Chair

Joseph Reid

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June 10, 2022

Date of last meeting: 6/9/2022

Plans for next meeting

Continue work on Math 244 and try to get consensus for the last two items in 243.

Overview

Up to this point our group has worked to find a set of course outcomes that would be able to make a course that is substantially the same between all campuses. Based on outcomes alone, the group found that there is enough variation in the topic of statistics so that courses would not be substantially similar (simply based on the 9 outcomes we had, up to around 70% of the course could be substantially different in content by my estimate). This pressured us to determine a set of shared objectives under these outcomes that would align the course material up to 75% for the courses without restricting the realm of dictating which statistical framework (frequentist, bayesian, or re-sampling) the courses are taught under.

A great deal of work went into finding agreement on these outcomes/objectives. Furthermore, the group is aware that assessment will have to be performed on all outcomes, thus we were able to condense the outcomes/objectives into five outcomes (supported by 14 objectives) that would provide a sufficiently similar content so that universities and community colleges could all accept the course for transfer.

Furthermore, a discussion of subject code, course number, title, and number of credits took place with the group coming to agreement on some of them. Finally, a course description was written to support the course. At the last meeting on 6/9/2022 the group voted on a number of these and, in all but two, were able to have a successful vote regarding the first of the two courses we were tasked with addressing. We have yet to start on the second course.

In terms of plans for the future, we obviously need to start Fall term with sufficient information to pass a vote regarding the subject code and credits for the course in order to complete the charge for this first course.

Action Items Completed

ACTIVITY	STATUS
Course Number: 243	Voted (10-0)– approved 6/9/2022
Course Title: Elementary Statistics I	Voted (10-1) – approved 6/9/2022
Course Description for 243	<p>Voted (10-0)– approved 6/9/2022</p> <p>“A first course in statistics focusing on the interpretation and communication of statistical concepts. Introduces exploratory data analysis, descriptive statistics, sampling methods and distributions, point and interval estimates, hypothesis tests for means and proportions of one and two populations, and elements of probability and correlation. Technology will be used when appropriate. “</p>
Learning outcomes/objectives for 243	<p>Voted (10-0) – approved 6/9/2022</p> <ol style="list-style-type: none"> 1. Students will be able to critically read, interpret, report, and communicate the results of a statistical study along with evaluating assumptions, potential for bias, scope, and limitations of statistical inference. <ol style="list-style-type: none"> a. Students will classify study designs and variable types and identify methods of summary and analysis. 2. Students will be able to produce and interpret summaries of numerical and categorical data as well as appropriate graphical and/or tabular representations. <ol style="list-style-type: none"> a. Students will be able to identify patterns and

	<p>striking deviations from patterns in data.</p> <ul style="list-style-type: none">b. Students will be able to identify associations between variables for bivariate data.c. Students will apply technology to calculate statistical summaries and produce graphical representations. <p>3. Students will use the distribution of sample statistics to quantify uncertainty and apply the basic concepts of probability into statistical arguments.</p> <ul style="list-style-type: none">a. Students will compute and interpret point and interval estimates <p>4. Students will be able to identify, conduct, and interpret appropriate parametric hypothesis tests</p> <ul style="list-style-type: none">a. Students will identify the appropriate test based on variable type.b. Students will identify situations where a one or two tailed test would be appropriate.c. Students will be able to conduct tests of one and two means.d. Students will be able to conduct tests of one and two proportions.e. Students will explain the distinction between statistical and practical significance and the potential for error in hypothesis test conclusions.f. Students will apply
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	<p>technology to perform hypothesis tests calculations.</p> <p>5. Students will be able to assess relationships in quantitative bivariate data.</p> <ol style="list-style-type: none"> a. Students will be able to address questions relating correlation as a linear association between variables. b. Students will distinguish between correlation and causation within data. c. Students will apply technology to explore bivariate data.
Subject code: not math 243	Voted (10 -1) – approved 6/9/2022

Action Items In-progress/Pending

ACTIVITY	STATUS
Determine / Agree on actual subject code	Voted on several proposals. None were able to pass
Determine number of credits	Vote not passed on 4 credits. Unlikely to find agreement.
All work for 244 yet to be done.	

Recommendations & Rationale

- Subject Code: A subject code representing statistics that is not MATH/MTH/MA... is agreed upon.

- While the group could not reach agreement on the actual subject code (we voted on ST or STAT but neither was able to reach 10 votes total), it was agreed by 10 of the 11 representatives at the meeting that the course subject code cannot be mathematics. Many faculty expressed excitement about this change (not a change at Oregon State as their math and statistics departments are already separated.) This proposal is supported due to the fact that:
 - Statistics is not a subfield of mathematics
 - Students should recognize the difference between mathematical logic and thought when compared with statistical logic and thought

The concern associated with the specific naming is that schools will have to go through significant work to do so including changing every major and curriculum map in the institution. Other concerns include who would “own” the new code in terms of departments, overlap in codes (“ST” is surgical-technology in at least one institution). Since the maximum number of members we could get to a meeting to vote is 11 and having even two no votes can tank the vote, we were unable to reach agreement on a specific code.

- Course Number: 243
 - This is the most used number associated with a first term of elementary statistics at the universities and community colleges. There was a discussion (and significant objection by several members) to considering a 1xx course number, but 243 was widely supported.
- Course Title: Elementary Statistics I
 - This course is a first course in statistical thought and processes with minimal understanding of anything in data leading up to the course. As such, a designation of “elementary” is appropriate. The numeric identifier of “I” was the only sticky point in this case as many schools will not have a second course offered, so there was an objection by one member to this.
- Course Description: A first course in statistics focusing on the interpretation and communication of statistical concepts. Introduces exploratory data analysis, descriptive statistics, sampling methods and distributions, point and interval estimates, hypothesis tests for means and proportions of one and two

populations, and elements of probability and correlation. Technology will be used when appropriate.

- Course description was created on 6/9/2022 by the committee representatives together and includes the course outcomes in a brief statement.
 - Statement was unanimously accepted among members that were present.
- Learning outcomes: The following was unanimously passed as a group among the voting members that were present with the caveats that the “objectives” under each of the “outcomes” MUST be included within each institution in order to make the courses substantially similar and that they be spell checked before submission (😊).
- 1.) Students will be able to critically read, interpret, report, and communicate the results of a statistical study along with evaluating assumptions, potential for bias, scope, and limitations of statistical inference.
 - a.) Students will classify study designs and variable types and identify methods of summary and analysis.
 - 2.) Students will be able to produce and interpret summaries of numerical and categorical data as well as appropriate graphical and/or tabular representations
 - a.) Students will be able to identify patterns and striking deviations from patterns in data
 - b.) Students will be able to identify associations between variables for bivariate data
 - c.) Students will apply technology to calculate statistical summaries and produce graphical representations.
 - 3.) Students will use the distribution of sample statistics to quantify uncertainty and apply the basic concepts of probability into statistical arguments.
 - a.) Students will compute and interpret point and interval estimates
 - 4.) Students will be able to identify, conduct, and interpret appropriate parametric hypothesis tests
 - a.) Students will identify the appropriate test based on variable type
 - b.) Students will identify situations where a one or two tailed test would be appropriate
 - c.) Students will be able to conduct tests of one and two means
 - d.) Students will be able to conduct tests of one and two proportions

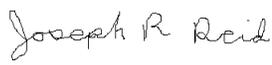
- e.) Students will explain the distinction between statistical and practical significance and the potential for error in hypothesis test conclusions
 - f.) Students will apply technology to perform hypothesis tests calculations
- 5.) Students will be able to assess relationships in quantitative bivariate data
- a.) Students will be able to address questions relating correlation as a linear association between variables
 - b.) Students will distinguish between correlation and causation within data
 - c.) Students will apply technology to explore bivariate data.

Questions for Transfer Council

- Members choose to abstain from voting in several areas where they cannot assess the impacts of decisions (change in subject code and credits). We cannot force them to vote and I don't see this changing. What then?

Signed by:

Name: Joseph R. Reid

Signature: 

Date: June 10, 2022

Provide copies to:

CCN STATs Chair: Joseph Reid

Transfer Council Co-chairs: Susan Jeffords

Teresa Rivenes

Transfer Council

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