**Proposal to add a “Templated” course to an institutional core curriculum.**

**Proposing institutions should review the following before completing their sections of this form.**

Note that this form cannot be used if there are any changes to the areas already filled in in this proposal.

Requests for templated courses to be added to Core IMPACTS areas:

* Do the course prefix, numbering, title, and description conform with the USG list of Common Course Prefixes, Numbers, Titles, and Descriptions? Academic and Student Affairs Handbook, Section 2.4.10 (<https://www.usg.edu/academic_affairs_handbook/section2/handbook/C738/#p2.4.10_common_course_prefixes_numbers_and_descriptions>)

Rules for inclusion in Areas A-E:

* See the Academic and Student Affairs Handbook, Section 2.4.4 Details Regarding Areas A-F (<https://www.usg.edu/academic_affairs_handbook/section2/handbook/C738/#p2.4.4_details_regarding_areas_af>)
* See the Academic and Student Affairs Handbook, Section 2.4.5 Rules Regarding Inclusion in Areas A-F (<https://www.usg.edu/academic_affairs_handbook/section2/handbook/C738/#p2.4.5_rules_regarding_inclusion_in_areas_af>)

There are 2 parts to this form:

* [Part 1](#part1) is to be filled out by the **Institution** proposing the course.
* [Part](#part4) 2 is to be filled out by the **Council on General Education**.

**Part 1. To be filled out by the institution proposing the course.**

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| **Note:**  This form and all ancillary information should be filled out in Word and saved as a single document using the following file-naming convention:  UniqueAbbreviationForYourCollegeCoursePrefixCourseNumber for example **GCSUPSYC1101.docx**  You will then fill out some very brief information and upload the entire document to the USG website at  <https://www.usg.edu/strategic_academic_initiatives/committees/course_proposal_form>  **Please do not delete any pages of this document.** |

1.  **Institution:**

1. **This is a proposal for placement of a template course into the institutional core curriculum.** The information provided below must agree with the information on the approved template.

Data Science

1. **Course Subject** (e.g., philosophy):

DATA 1501

1. **Course Prefix and Number** (e.g., PSYC 1101):
2. **Course Title** as it appears (or will appear) in the catalog:

|  |
| --- |
| Introduction to Data Science |

1. **Lecture Hours – Laboratory Hours\* – Credit Hours** (e.g., 3-0-3):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 |  | 0 |  | 3 |

\* In determining credit hours, 2 – 3 laboratory hours are usually equivalent to one credit hour. So a course with a 2 hour lab would be 3-2-4; a course with a 3 hour lab would be 3-3-4.

1. **Provide a catalog description of the course** in the box below:

|  |
| --- |
| This course is intended to provide an introduction into the field of Data Science. Students will develop skills in appropriate technology and basic statistical methods by completing hands-on projects focused on real-world data and addresses the social consequences of data analysis and application. |

1. **Course Prerequisites:**

|  |  |  |
| --- | --- | --- |
| **Learning Support Prerequisites or Corequisites:** Please select the most appropriate Learning Support prerequisite or corequisite statement. Check only one. | | |
|  | None | |
|  | Corequisite: Learning Support English unless exempted. | |
|  | Exit or exemption from Learning Support English. | |
|  | Corequisite: Learning Support Mathematics unless exempted. | |
| **X** | Exit or exemption from Learning Support Mathematics. | |
|  | Exit or exemption from both Learning Support English and Learning Support Mathematics. | |
|  | Other (explain): | |
| **Collegiate Courses that will be Prerequisites and/or Corequisites for this course** (enter “none” if not applicable): | | |
| None | | |

1. **Core IMPACTS area for Proposed Course**

STEM

**What Core IMPACTS area is this course being proposed for?**

|  |  |
| --- | --- |
| **STEM** | **SLO:** Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems, and explain natural phenomena.  **CRCs:** Inquiry and Analysis / Problem-Solving / Teamwork |

**How will this course satisfy the Learning Outcome for this area?**

|  |
| --- |
|  |

**How might instructors in sections of this course help students develop the three Career-Ready Competencies?** (If the course is proposed for more than one area, provide a separate explanation of how the instructors might help students develop the three Career-Ready Competencies for *each* area.)

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1. **Agreement to follow the approved Common Course Outline for this course.**

It is a condition for approval of a “templated” course that the institution agrees to follow the approved (by the Council on General Education) Common Course Outline (developed by the RAC) for this course and that templated courses may only be approved for the core area(s) for which the template was approved. Check the box below to indicate your institution’s agreement to follow the approved Common Course Outline for this course.

|  |  |
| --- | --- |
|  | I agree |

1. **General Education and Core IMPACTS Course Assessment**

**How will you assess whether students taking this proposed course meet the approved Core IMPACTS Learning Outcome(s)?** (If the course is proposed for more than one area, provide a separate explanation of how you will assess the Learning Outcome(s) for each area.)

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**How will the *course* level assessment described above contribute to your institutional process for assessing general education student learning outcomes?**

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|  |

1. **Course approval by institution**

List each step of the approval process at your institution and provide the **dates** on which your proposal was approved by each body or at each level. **By submitting this proposal you are affirming that this proposal has already received all appropriate approvals at your institution and that the proposal is being submitted with the knowledge and final approval of the Provost/VPAA at your institution, who should be listed on one of the lines below.**

|  |  |
| --- | --- |
| **Date** | **Level or approving body** |
|  |  |
|  |  |
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|  |  |

1. **Previous Versions of this Proposal**

**Have any proposals for this course previously been submitted by your institution to the Council on General Education?**

|  |  |
| --- | --- |
|  | Yes |
| X | No |

If yes, please indicate the date or dates (for repeat submissions) as best you can.

|  |
| --- |
|  |

What actions were taken on your previous submission(s)?

|  |  |
| --- | --- |
|  | Approved |
|  | Denied |
|  | Withdrawn |
|  | Tabled |

If a previous proposal was tabled or withdrawn, please explain.

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|  |

How have you changed this proposal since the last time you submitted a proposal for this course?

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|  |

1. **Please provide the following contact information for the person submitting the proposal. This should be either the Provost/VPAA or someone designated by the Provost/VPAA:**

|  |  |
| --- | --- |
| **Name of Person Submitting Proposal:** |  |
| **Email Address:** |  |
| **Phone Number:** |  |
| **Mailing Address:** |  |

The approved Common Course Outline for this templated course is included below.

**DATA 1501 - Introduction to Data Science**

*Course Description*

This course is intended to provide an introduction into the field of Data Science. Students will develop skills in appropriate technology and basic statistical methods by completing hands-on projects focused on real-world data and addresses the social consequences of data analysis and application.

#### Learning Outcomes

#### Required Outcomes for all Sections of the Course (should account for 70 – 80% of course content)

#### Explain the importance of and be able to formulate a data analysis problem statement that is clear, concise, and measurable.

#### Identify and appropriately acknowledge sources of data.

#### Be able to apply basic data cleaning techniques to prepare data for analysis.

#### Be able to identify the categorical and/or numerical data types in a given data set.

#### Apply appropriate descriptive and inferential methods to summarize data and identify associations and relationships.

#### Use appropriate tools and technology to collect, process, transform, summarize, and visualize data.

#### Be able to draw accurate and useful conclusions from a data analysis.

#### Effectively communicate methods and findings in a variety of modes.

#### Differentiate between ethical and unethical uses of data science.

#### Additional Optional Learning Outcomes (should account for 20 – 30% of course content)

#### Identify goals and methods of testing hypotheses.

#### Explain the bootstrap methods.

#### Identify legal issues surrounding the use of data.

#### Mine data to develop predictive models and evaluation.

**Topics (70%-80% of course content):**

**What are data?**

Sources of data, data collection and types of data

Sampling from a population

Data errors and appropriateness/Cleaning Data

The role of data in decision making at various levels of society

**Methods of Data Analysis, including, but not limited to:**

Distributions (including measures of central tendency and spread)

Expressions, names, and tables

Joins

Arrays

Functions

Modeling/mining the data

**Using Computational Tools and Statistical Techniques for basic data manipulation**

**Interpreting results of the data analysis/Data Interpretation, possibly including, but not limited to the following:**

Correlation

Chance

Decisions and error probabilities

Classification

Confidence intervals

Simulations

Empirical, Categorical, and Numerical Distributions

Assessing Models

**Communicate data-driven insights in multiple media modes**

Data visualization - (including graphs, charts, and histograms - univariate qualitative, univariate quantitative, bivariate)

Communication of the Data Science Findings and What It Means

Converting data into actionable information and the role of data in decision making at various levels of society

**Ethical Aspects of Data Science**

Accuracy

Misrepresentation

Privacy

Security

**Additional topics (20%-30% of course content):**

A/B Testing

Experiments

Hypothesis testing

Regression/Least squares

Prediction intervals

Inference for the true slope

Bootstrap

Bagging

Clustering

Frequent Patterns (Shopping Basket Analysis)

Information Retrieval

Anomaly Detection

Legal issues surrounding data

Causality and Experiments

**Potential Textbooks**

[The Foundations of Data Science](https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcompletega.org%2Fcivicrm%2Fmailing%2Furl%3Fu%3D213%26qid%3D&data=02%7C01%7Cbarbara.brown%40usg.edu%7C47b8a27fa5274441970908d824efedd0%7C4711f877fb3a4f11aaab3c496800c23d%7C0%7C0%7C637299960200789306&sdata=hcQoYMntjT4olDX8ct1s4cdro%2FcEtFDnPVs75ndtJro%3D&reserved=0)By Ani Adhikari and John DeNero, the OER that is currently used for the University of California - Berkeley Data 8 Course.

This is potentially one of many texts that would be appropriate for the course. Optimally, the text would be free or low-cost for students.

**Part 2. To be filled out by the System Liaison for the Council on General Education.**

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| --- |
| **Course Prefix, Number, & Title:** DATA 1501 Introduction to Data Science  **Institution:** |

1. Date the review by the Council on General Education was conducted:

|  |
| --- |
|  |

1. What action did the Council on General Education take with respect to this proposal?

|  |  |
| --- | --- |
|  | Approved |
|  | Denied |
|  | Withdrawn |
|  | Tabled |

1. Please enter any comments from the Council on General Education in the box below. Comments should focus on the appropriateness of inclusion of the proposed course in the core curriculum, utilizing the criteria in the Academic and Student Affairs Handbook. (See [beginning](#beginning) of this form for summary of criteria and links.)

|  |
| --- |
| Insert text here. Box will expand as needed. |

1. Please mark the areas of the Core Curriculum for which the Council on General Education has approved the changed or proposed course.

|  |  |  |
| --- | --- | --- |
|  | **Area A (English, Mathematics)** | |
|  | **Area B (Institutional Options)** | |
|  | **Area C (Humanities, Fine Arts, Ethics)** | |
|  | **Area D (Natural Sciences, Mathematics, Technology)** | |
|  | If Area D, specify appropriate major(s): | |
|  |  | math/science majors |
|  |  | health professions majors |
|  |  | non-math/science/health professions majors |
|  | **Area E (Social Sciences)** | |

1. Please provide contact information for the System Liaison to the Council on General Education.

|  |  |
| --- | --- |
| **Liaison name:** | Melanie Largin |
| **Liaison daytime phone number:** | 404-962-3107 |
| **Liaison email Address:** | Melanie.largin@usg.edu |

Updated 12/28/2023