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| For Academic Affairs and Research Use Only |
| Proposal Number |  |
| CIP Code:  |  |
| Degree Code: |  |

**New or Modified Course Proposal Form**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

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| **[X]New Course, [ ]Experimental Course (1-time offering), or [ ]Modified Course (Check one box)** |

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

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| Kelly Fish 9/17/2020**Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**COPE Chair (if applicable)** |
| James Doering 9/17/2020**Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Head of Unit (if applicable)**   |
| Melodie Philhours 9/24/2020**College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Undergraduate Curriculum Council Chair** |
| Mary Elizabeth Spence 9/24/2020**Office of Assessment (new courses only)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Graduate Curriculum Committee Chair** |
| Melody Lo 9/24/2020**College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Vice Chancellor for Academic Affairs** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**General Education Committee Chair (if applicable)**   |  |

1. **Contact Person (Name, Email Address, Phone Number)**

Dr. Richard Segall, Professor [E-mail: rsegall@astate.edu, Phone: 870-972-3989]

A-STATE

Neil Griffin College of Business

Department of Computer & Information Technology

State University, AR 72467-0130

1. **Proposed starting term and Bulletin year for new course or modification to take effect**

Fall 2021.

**Instructions:**

*Please complete all sections unless otherwise noted. For course modifications, sections with a “Modification requested?” prompt need not be completed if the answer is “No.”*

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|  | **Current (Course Modifications Only)** | **Proposed (New or Modified)** *(Indicate “N/A” if no modification)* |
| **Prefix** |  | **CIT**  |
| **Number\*** |  | **3423** |
| **Title** |  | **Data Visualization for Business** |
| **Description\*\*** |  | Strategies and methods for visualization and communication of data to answer business questions, drive decisions, and provide persuasive evidence. |

 ***\**** (Confirm with the Registrar’s Office that number chosen has not been used before and is available for use. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*. )

\*\*Forty words or fewer as it should appear in the Bulletin.

1. **Proposed prerequisites and major restrictions** **[Modification requested? Yes/No]**

(Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

No Are there any prerequisites?

* 1. If yes, which ones?

Enter text...

* 1. Why or why not?

Enter text...

1. No. Is this course restricted to a specific major?
	1. If yes, which major? Enter text...
2. **Proposed course frequency [Modification requested? Yes/No**

(e.g. Fall, Spring, Summer; if irregularly offered, please indicate, “irregular.”) *Not applicable to Graduate courses.*

Spring

1. **Proposed course type [Modification requested? Yes/No]**

Will this course be lecture only, lab only, lecture and lab, activity (e.g., physical education), dissertation/thesis, capstone, independent study, internship/practicum, seminar, special topics, or studio? Please choose one.

Lecture and lab.

1. **Proposed grade type [Modification requested? Yes/No]**

What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard Letter

1. No Is this course dual-listed (undergraduate/graduate)?
2. No Is this course cross-listed?

*(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross-listed course.)*

**a.** – If yes, please list the prefix and course number of the cross-listed course.

 Enter text...

 **b.** – **Yes / No** Can the cross-listed course be used to satisfy the prerequisite or degree requirements this course satisfies?

 Enter text...

1. Yes Is this course in support of a new program?

a. If yes, what program?

 Business Analytics Certificate

1. No. Will this course be a one-to-one equivalent to a deleted course or previous version of this course (please check with the Registrar if unsure)?

a. If yes, which course?

Enter text...

**Course Details**

1. **Proposed outline** **[Modification requested? Yes/No]**

(The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Introduction to and Value of Data Visualization:

              Selecting the Right Chart for the Right Purpose

Week 2: Data Visualization: Data & Image Models, Properties of Data/Information

 Structured & Unstructured Data, Data Analytics Life Cycle

Week 3: Hands-on Data Visualization using Tableau: Introduction and Getting

 Started & Time-Based Comparison Charts: Line Charts, Multiline charts,

 Dual-y line Charts, Area Chart

Week 4: Category-Based Comparison Charts using Tableau & Google-Charts: Car

 and Column Charts, Radar Charts, Combo Charts, Waterfall Charts, etc.

Week 5: Composition Charts using Tableau: Donut Charts, Sunburst Chart,

 Stacked Bar and Column charts, Treemap charts, Funnel Chart, Pyramid Charts.

Week 6: Correlation charts and Dashboard Charts using Tableau: Bubble Charts, Gauge

 Chart, Candlestick Charts

Week 7: Data Visualization Case Studies in preparation for Take-Home Midterm

Weeks 7 & 8: Advanced Tableau exercises and Other Hands-on Data Visualization

 software as available such as PowerBI, Matplotlib and Python.

Weeks 9, 10, & 11: Students work on creating a personal visual data analysis project on

 a chosen dataset that should include:
 (i.) Live Tableau outputs and dashboard(s) demonstrating the techniques taught during the course. The dashboard(s) should consist of proper visualization and interactivity features relevant to the problem.

 (ii.) Outputs & Dashboard Documentation describing the following: The business problem, the analytic approach, the data sources used, the applied data cleaning and transformation steps, the calculations and other functionality used in Tableau, and a short user’s guide to the outputs & dashboards including print screens.

Week 12: Students prepare written report and presentations

Weeks 13 & 14: Other Hands-on Data Visualization software as available.

Week 15: Student Presentations on Data Visualization and Software Demonstrations and submit final team projects.

1. **Proposed special features** **[Modification requested? Yes/No]**

(e.g. labs, exhibits, site visitations, etc.)

Use of Computer Lab and Data Visualization software

1. **Department staffing and classroom/lab resources**

Computer lab in College of Business

1. Will this require additional faculty, supplies, etc.?

 No

1. No. Does this course require course fees?

 *If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.*

**Justification**

**Modification Justification (Course Modifications Only)**

1. Justification for Modification(s)

Enter text...

**New Course Justification (New Courses Only)**

1. Justification for course. Must include:

 a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

 Visualization of data and the associated tools and techniques are essential for more fully understanding outputs generated by functions and processes of businesses.

b. How does the course fit with the mission of the department? If course is mandated by an accrediting or certifying agency, include the directive.

 Visualization of data and the associated information systems tools and techniques are essential components of Business Analytics which now carries a heavy curriculum emphasis in the mission of the department.

c. Student population served.

Students in College of Business interested in Business Analytics. These would be majors in Computer & Information Technology (new name Information Systems & Business Analytics) and others as an elective.

d. Rationale for the level of the course (lower, upper, or graduate).

Upper level course because of need for students to demonstrate success at lower level.

**Assessment**

**Assessment Plan Modifications (Course Modifications Only)**

1. No. Do the proposed modifications result in a change to the assessment plan?

 *If yes, please complete the Assessment section of the proposal*

**Relationship with Current Program-Level Assessment Process (Course modifications skip this section unless the answer to #18 is “Yes”)**

1. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

PLO1 -Evaluate information systems and analyze data in order to recommend possible solutions.

PLO3 - Make decisions on how to allocate resources in order to reach organizational goals.

1. Considering the indicated program-level learning outcome/s (from question #19), please fill out the following table to show how and where this course fits into the program’s continuous improvement assessment process.

*For further assistance, please see the ‘Expanded Instructions’ document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.*

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| **Program-Level Outcome 1 (from question #19)** | Evaluate information systems and analyze data in order to recommend possible solutions. |
| Assessment Measure | Direct – ISBA 4663, Enterprise Resource Planning: scoring rubrics on term projects, cases and examsIndirect – Survey results from Major Fields Exam |
| Assessment Timetable | Direct - Fall 2021 and Fall 2023Indirect – Fall 2021 and Spring 2023 |
| Who is responsible for assessing and reporting on the results? | Direct – Faculty teaching ISBA 4663Indirect – NGCOB Assessment of Learning Committee  |

 *(Repeat if this new course will support additional program-level outcomes)*

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| **Program-Level Outcome 3 (from question #19)** | Make decisions on how to allocate resources in order to reach organizational goals. |
| Assessment Measure | Direct – ISBA 4663, Enterprise Resource Planning: scoring rubrics on term projects, cases and examsIndirect – Survey results from Major Fields Exam  |
| Assessment Timetable | Direct - Fall 2021 and Fall 2023Indirect – Fall 2021 and Spring 2023 |
| Who is responsible for assessing and reporting on the results? | Direct – Faculty teaching ISBA 4663Indirect – NGCOB Assessment of Learning Committee |

**Course-Level Outcomes**

1. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

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| **Outcome 1** |  Students will have developed knowledge, skills and understanding around a range of subjects in the field of data visualization. |
| Which learning activities are responsible for this outcome? | Assigned readings, lecture, computer lab assignments, and activities with large data sets to be used for visualization. |
| Assessment Measure  | Scores on graded computer lab assignments, homework, and exams. |

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| **Outcome 2** | Students will learn the key design principles and techniques for visualizing data. |
| Which learning activities are responsible for this outcome? | Assigned readings, lecture, lab assignments, and activities with large data sets to be used for visualization. |
| Assessment Measure  | Scores on graded computer lab assignments, homework, and exams.  |

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| **Outcome 3** | .     Provide an overview and develop competency on the use of several available software tools that can be used for data visualization such as Tableau, PowerBI, and Python’s libraries. |
| Which learning activities are responsible for this outcome? | Assigned readings, lecture, lab assignments, and activities with large data sets to be used for visualization. |
| Assessment Measure  | Scores on graded computer lab assignments, homework and take-home exams. |

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| **Outcome 4** |  Allow for project-based opportunities to identify, understand, analyze, prepare, and present effective visualization on a variety of business applications. |
| Which learning activities are responsible for this outcome? | Written homework, team project and presentation due at end of course. |
| Assessment Measure  | Graded Team project |

*(Repeat if needed for additional outcomes)*

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| **Outcome 5** | Students will understand how to effectively interpret and communicate their ideas through written and oral reports on the subject of data visualization. |
| Which learning activities are responsible for this outcome? | Written homework, team project and presentation due at end of course. |
| Assessment Measure  | Graded team project and team presentation. |

*(Repeat if needed for additional outcomes)*

**Bulletin Changes**

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| **Instructions**  |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Please include a before (with changed areas highlighted) and after of all affected sections.** **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**  |

 **CIT 3523. Operations Management** Introduction to the operations function in manufacturing and services. Emphasis on continual improvement of systems for producing goods and services. Pre/Co-requisite, CIT 3013. Prerequisites, CIT 1503; ACCT 2023 or ACCT 2033; and STAT 3233. Fall, Spring, Summer.

**CIT 3533. Microcomputer Applications II** Continuation of CIT 1503 to cover advanced topics in the area of spreadsheets and databases. Prerequisite, CIT 1503 or CS 1013, and CIT 2033. Fall.

**CIT 3423 Data Visualization for Business** Strategies and methods for visualization and communication of data to answer business questions, drive decisions, and provide persuasive evidence. Spring.

**CIT 3603. Systems Analysis and Design** Covers the basic techniques used in the analysis, design, and implementation of computer-based information systems. Provides overview of the systems development life cycle, systems documentation and program specifications, data gathering and information reporting activities, transition from analysis to design. Pre/Co-requisite, CIT 3013. Corequisite, CIT 3403. Fall.

**CIT 3623. LAN Administration** Covers topics pertinent to the administration of a local area network. Topics include, user management, file management, security, and network printing. Pre/Co-requisite, CIT 3013. Prerequisite, computer literacy. Fall.

**CIT 3663. Data Mining** Theory and practice of knowledge discovery in databases (KDD) with emphasis on predictive modeling and model evaluation using computer software such as SAS to perform data mining. Pre/Co-requisite, CIT 3013. Prerequisites, STAT 3233; or instructor permission. Fall, odd

Also as shown in pp. 124, 126 and 454 of the Comprehensive bulletin changes for NGCOB CIT curriculum revision file:

