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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**

|  |
| --- |
| **[ ]New Course, [ ]Experimental Course (1-time offering), or [X]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** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Director 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](mailto:rsegall@astate.edu) & Phone: 870-972-3989]

Arkansas State University

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**

**Spring 2022**

**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** | **N/A** |
| **Number\*** | **3413** | **N/A** |
| **Title** | **Advanced Database Management** | **Big Data for Business** |
| **Description\*\*** | **Extends the coverage of 3403 using a popular DBMS. Topics include client applications, object-oriented database development and data security.** | **An introductory course in big data concepts, tools and methods. Students will be exposed to and work with big data sets and derive business solutions from their analyses.** |

***\**** (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]**

(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).

1. No Are there any prerequisites?
   1. If yes, which ones?

Enter text...

* 1. Why or why not?

Big Data is not a Relational Database model, therefore CIT 3403 prerequisite no longer required

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

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

To be offered every Spring.

1. **Proposed course type [Modification requested? 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

Enter text...

1. **Proposed grade type [Modification requested? 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. **Yes.** 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?

CIT 3413 Advanced Database Management

**Course Details**

1. **Proposed outline** **[Modification requested? 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.)

**Tentative Schedule of Lecture Topics:**

Week 1: Overview and Relevance of Big Data:

Why Big Data? What is Big Data?

Week 2: Big Data: Concepts, Technologies and Applications

Exascale Computing

Hadoop Distributed File Systems (HDFS), Apache HBase, and NoSQL

MapReduce, Spark, Hive, Pig, MongoDB, etc., Hadoop 2 (YARN)

Week 3: Trends of Computing for Big Data

High-Performance Computing: Supercomputers and Clusters

Grid Computing, Cloud Computing, Mobile Computing

Week 4: Big Data Visualization; healthcare case study

Week 5: Big Data Applications to streaming data and large-scale graph processing techniques

Week 6: Big Data Case Studies:

Big financial data for Banks, Big spatial-temporal data (e.g. geographical

databases), Big multimedia data (e.g. audio/videos), big medical data,

social media data, Big scientific data (e.g. bioinformatics data), Big Data and

High-Performance Analytics, The Rise of Big Data Analytics

Weeks 7 & 8: Hands-on Introduction to Big Data

SAS Visual Analytics for Big Data using SAS Viya for Tablets and Mobile Devices

Getting Started with SAS Visual Analytics, Preparing Data using SAS Data Studio

Week 9: Analyzing Data using SAS Visual Analytics

Designing Reports with SAS Visual Analytics

Weeks 10 & 11: Selected Advanced Applications of SAS Visual Analytics

(E.g. Geographic Mapping, Forecasting, Network Analysis, Path Analysis, Text

Analytics, etc.)

Weeks 12 & 13: SAS Visual Statistics for Big Data for Tablets and Mobile Devices

Week 14: Other Hands-on Big Data Software as available. (E.g. Tableau, Power BI,

RapidMiner, Weka, etc.)

Week 15: Student Presentations on Big Data Applications and Software Demonstrations

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

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

Computer labs

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

Enter text...

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)

Advanced Database Management today deals with extremely large amounts of data known as “Big Data.” Previously Advanced Database Management dealt with the Relational Database Model but that is no longer the case as the field has evolved into non-SQL type databases.

**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)

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.

c. Student population served.

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

**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?

Enter text...

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)** |  |
| Assessment Measure | Please include direct and indirect assessment measure for outcome. |
| Assessment  Timetable | What semesters, and how often, is the outcome assessed? |
| Who is responsible for assessing and reporting on the results? | Who (person, position title, or internal committee) is responsible for assessing, evaluating, and analyzing results, and developing action plans? |

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

**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 big data analytics. |
| Which learning activities are responsible for this outcome? | Assigned readings, lecture, lab assignments, and activities with big data sets. |
| Assessment Measure | Scores on graded computer lab assignments, homework, and exams. |

*(Repeat if needed for additional outcomes)*

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| **Outcome 2** | Students with understand techniques for storing and processing large amounts of structured and unstructured data. |
| Which learning activities are responsible for this outcome? | Assigned readings, lecture, lab assignments, and activities with big data sets. |
| Assessment Measure | Scores on graded computer lab assignments, homework, and exams. |

*(Repeat if needed for additional outcomes)*

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| **Outcome 3** | Students will be able to design and build big data applications through highly scalable systems capable of collecting, processing, storing, and analyzing large volumes of data. |
| Which learning activities are responsible for this outcome? | Assigned readings, lecture, lab assignments, and activities with big data sets. |
| Assessment Measure | Scores on graded computer lab assignments, homework, and exams. |

*(Repeat if needed for additional outcomes)*

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| **Outcome 4** | Students will be able to apply concepts and principles from science and business to analyze and interpret using analytic and computer-based techniques. |
| Which learning activities are responsible for this outcome? | Assigned readings, lecture, lab assignments, and activities with big data sets. |
| Assessment Measure | Scores on graded computer lab assignments, homework, and exams. |

*(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 topic of big data. |
| Which learning activities are responsible for this outcome? | Written homework, team project and presentation due at end of course. |
| Assessment Measure | Scores on completed 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 3403**. Database Management** Enterprise-wide database theory and SQL with the use of industry standard DBMS, such as MySQL, Oracle, or SQL Server. Pre/Co-requisite, CIT 3013. Fall.

CIT 3413~~.~~ **~~Advanced Database Management~~** ~~Extends the coverage of CIT 3403 using a popular DBMS. Topics include client applications, object oriented database development, and data security. Pre/Co-requisite, CIT 3013~~. ~~Prerequisite, “C” or better in CIT 3403. Spring.~~

CIT 3413 **Big Data for Business**  An introductory course in big data concepts, tools and methods. Students will be exposed to and work with big data sets and derive business solutions from their analyses. Spring.

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.

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

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