

Accounting
Course Number: 22:010:688
Course Title: Audit Analytics

COURSE DESCRIPTION

Audit Analytics is the first course of the Audit Analytics Certificate Program. There are three main purposes of this course: (1) introduce the basic concepts surrounding audit analytic techniques, (2) discuss some of the modern audit analytic techniques that have been developed for internal and external auditors, and (3) learn how these techniques can be used by organizations to provide better audits. The Audit Analytics Certificate Program is in conjunction with the Master of Accountancy in Financial Accounting (MACCY) Program. This program is designed to be a self-contained set of non-matriculated courses that can be taken by self-actualizing professionals that need to update their analytic skills and promote change in the profession towards a modern audit¹. MACCY or other graduate students may take these courses as electives, while non-matriculated students may take the four-course certificate independently.

In recent years, audit analytics has drawn great attention in the accounting profession due to the increase in demand for enhancing audit quality by regulators, creditors, and investors; many audit firms and internal auditors have applied audit analytics to their audit processes. In response to this trend, this course aims at introducing our students the concept of audit analytics, the basic audit analytical tools, and the application of various analytical methods in both internal and external audit processes. Please note that this course mainly emphasizes the usage of statistics and the interpretation of results rather than the mathematics of specific tools or techniques; in other words, this course does not primarily focus on the technical aspects of analytical methods.

COURSE MATERIALS

There is no specific textbook to this course. All of the lectures will have a set of slides associated to them and some have corresponding videos. Students will be able to view the posted slides and videos on Canvas at the beginning of each week. Teaching materials will be drawn from many sources including the Internet, professional articles, academic articles and books. You can access the course materials under your individual student accounts on Canvas.

LEARNING GOALS AND OBJECTIVES

This course is intended to provide students with the basic understanding of the application of analytics to the (internal and external) audit process in current ubiquitous computer-based information systems and their application in organizations. Students who complete this course are expected to:

1. Gain a managerial overview of analytical techniques.
 2. Understand ways in which information systems are used in organizations and industries.
 3. Gain understanding of the evolving scenario of big data analytics auditing.
 4. Perceive the progressive convergence of analytics methods, information processing, and telecommunication technologies.
 5. Link audit analytics to corporate continuous monitoring and business process support.
 6. Obtain hands-on experience of using state-of-the-art audit analytical tools.
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PREREQUISITES

This course has no prerequisites. However, it would be helpful if students have basic knowledge of auditing and statistics.

ACADEMIC INTEGRITY

I do NOT tolerate cheating. Students are responsible for understanding the RU Academic Integrity Policy (<http://academicintegrity.rutgers.edu/>).

I will strongly enforce this Policy and pursue *all* violations. On all examinations and assignments, students must sign the RU Honor Pledge, which states, “On my honor, I have neither received nor given any unauthorized assistance on this examination or assignment.” I will screen all written assignments through *SafeAssign* or *Turnitin*, plagiarism detection services that compare the work against a large database of past work. Don’t let cheating destroy your hard-earned opportunity to learn. See business.rutgers.edu/ai for more details.

CLASS PARTICIPATION

- Online discussion in Canvas is the primary way for the students to communicate with instructors and other students.
- Class participation will be evaluated according to students’ participation in each week’s discussion. Students can participate in the discussion by (1) answering the instructor’s questions, (2) posting

their own questions, and/or (3) answering other students' questions in the chat room. The instructor will post one to two questions each week, and the students should answer the question once they finish each week's lecture.

- The evaluation of class participation is based on both the quantity and the quality of the questions and answers.
- Related information from different sources can be used in discussion with proper reference, but student must also provide his own opinion on that information.

ASSIGNMENTS

- There will be three individual assignments throughout the semester (Please see the distribution dates and due dates of assignments in the course outline below)
- The assignments will require you to do some analytic tasks using the tools covered in class.
- Students must upload their assignments to Canvas prior to the deadline.

COURSE PROJECT

- Students can choose to do the course project individually or in groups. Each group can have up to two students. If you are part of a group in the course project, please explicitly state which part of the project you contributed to.
- The topic of course project can be of your choice, however, it should be related to the class topics. During the course presentation week, students should prepare a presentation that is between 10 to 15 minutes in length. Each student/group should record their presentation and upload the video to Canvas.
- Presentations are evaluated based on the content, organization, originality, and delivery.
- Make sure that you reference the materials that you have retrieved or drawn from the Internet or from other sources.
- Project paper – There are no requirement on the pages. However, the report needs to contain clear information about your research topic, the results, and the conclusion.
- The final project report can have the following suggested outline:
 - Title (including your name)
 - Abstract o Introduction (i.e. What are the research questions? Why are the questions important?
How are you planning to do it?) o Literature review (i.e. existing research related to your research questions) o Methodology (i.e. what tools/techniques/methods are you planning to use?) o Result (i.e. testing results)
 - Conclusion (i.e. what is your conclusion to your research questions? any contributions?)

FINAL EXAM

- The final exam will be a remote exam for three hours. The exam will be sent to students via Canvas, and the students need to complete the exam in Canvas within three hours.

- The content of the final exam will include the materials covered in the lecture slides, assignments, projects, and class discussions.
- The students can access to any materials including the Internet during the exam, however, please follow the following two rules during the final exam: (1) students cannot discuss or share their answers with others during the exam, (2) students need to properly cite the resources used for the exam. Do not cut and paste blindly, uncited text is plagiarism and will be treated as such.
- All students are expected to take the final exam at the same time. If a student has valid excuse which complies with University regulations for missing an examination, the student must inform the instructor and obtain permission accordingly before the exam. Failure to obtain the necessary permission will result in a zero grade.

GRADING POLICY

The course grades are based on the following criteria:

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|---------------------------------|-----|
| • Class Participation | 20% |
| • Assignments | 30% |
| • Course Project & Presentation | 30% |
| • Final Exam | 20% |

Final Grade

Over 90 Points	A
85-89	B+
80-84	B
75-79	C+
65-74	C
60-64	D
Below 60	F

COURSE SCHEDULE

- Due to the state-of-the-art nature of the course, course materials and slides will be updated during the semester.
- Please note that this is a tentative course schedule. The contents of the lectures will be slightly adjusted during the semester based on the progress of the course.

Week #	Topic	Sub topic	Items Due
1.	<ul style="list-style-type: none"> • Introduction to audit analytics in audit engagements • Overview of Audit Data Analytics • Big Data and Continuous Auditing 	<ul style="list-style-type: none"> • Excel 	
2.	<ul style="list-style-type: none"> • Integrate Audit Data Analytics to Audit 	<ul style="list-style-type: none"> • Excel 	Assignment 1 Post
3.	<ul style="list-style-type: none"> • Planning and Risk Identification (I) 	<ul style="list-style-type: none"> • Data Basics • Text Mining • Python 	
4.	<ul style="list-style-type: none"> • Planning and Risk Identification (II) 	<ul style="list-style-type: none"> • Data preprocessing • Automation • Python 	Assignment 1 Due Assignment 2 Post
5.	<ul style="list-style-type: none"> • Preliminary Analytical Procedures and Risk Assessment 	<ul style="list-style-type: none"> • Visualization • Tableau 	
6.	<ul style="list-style-type: none"> • Substantive Procedures 	<ul style="list-style-type: none"> • Common Analysis in Major Business Processes • CaseWare IDEA 	Assignment 2 Due
7.	<u>SWAM</u>		
8.	<ul style="list-style-type: none"> • Choose 4 topics from SWAM <ul style="list-style-type: none"> ○ Data and Descriptive Statistics ○ Database and SQL ○ Robotic Process Automation (RPA) ○ Neural Network ○ Business Process Mining ○ Expert System ○ Artificial Intelligence and Expert System ○ Advanced Analytics in Continuous Auditing ○ Predictive Analytics ○ Clustering • Complete the Quiz after each topic <ul style="list-style-type: none"> ○ This will be considered as your grade for Assignment 3 		
9.			
10.			

11.	Final Project Final Exam Review	<ul style="list-style-type: none"> • Final Project Report • Final Project Presentation 	Due on
	Final Exam		

SUPPORT SERVICES

If you need accommodation for a *disability*, obtain a Letter of Accommodation from the Office of Disability Services. The Office of Disability Services at Rutgers, The State University of New Jersey, provides student-centered and student-inclusive programming in compliance with the Americans with Disabilities Act of 1990, the Americans with Disabilities Act Amendments of 2008, Section 504 of the Rehabilitation Act of 1973, Section 508 of the Rehabilitation Act of 1998, and the New Jersey Law Against Discrimination. More information can be found at ods.rutgers.edu.

[Rutgers University-New Brunswick ODS phone (848)445-6800 or email dsoffice@echo.rutgers.edu]

[Rutgers University-Newark ODS phone (973)353-5375 or email ods@newark.rutgers.edu]

If you are *pregnant*, the Office of Title IX and ADA Compliance is available to assist with any concerns or potential accommodations related to pregnancy.

[Rutgers University-New Brunswick Title IX Coordinator phone (848)932-8200 or email jackie.moran@rutgers.edu]

[Rutgers University-Newark Office of Title IX and ADA Compliance phone (973)353-1906 or email TitleIX@newark.rutgers.edu]

If you seek *religious accommodations*, the Office of the Dean of Students is available to verify absences for religious observance, as needed.

[Rutgers University-New Brunswick Dean of Students phone (848)932-2300 or email deanofstudents@echo.rutgers.edu]

[Rutgers University-Newark Dean of Students phone (973)353-5063 or email DeanofStudents@newark.rutgers.edu]

If you have experienced any form of *gender or sex-based discrimination or harassment*, including sexual assault, sexual harassment, relationship violence, or stalking, the Office for Violence Prevention and Victim Assistance provides help and support. More information can be found at <http://vpva.rutgers.edu/>.

[Rutgers University-New Brunswick incident report link: <http://studentconduct.rutgers.edu/concern/>. You may contact the Office for Violence Prevention and Victim Assistance at (848)932-1181]

[Rutgers University-Newark incident report link: https://cm.maxient.com/reportingform.php?RutgersUniv&layout_id=7 . You may also contact the Office of Title IX and ADA Compliance at (973)353-1906 or email at TitleIX@newark.rutgers.edu. If you wish to speak with a staff member who is confidential and does **not** have a reporting responsibility, you may contact the Office for Violence Prevention and Victim Assistance at (973)353-1918 or email run.vpva@rutgers.edu]

If students who have experienced a temporary condition or injury that is adversely affecting their ability to fully participate, you should submit a request via <https://temporaryconditions.rutgers.edu> .

If you are a military *veteran* or are on active military duty, you can obtain support through the Office of Veteran and Military Programs and Services. <http://veterans.rutgers.edu/>

If you are in need of *mental health* services, please use our readily available services.

[Rutgers University-Newark Counseling Center: <http://counseling.newark.rutgers.edu/>]

[Rutgers Counseling and Psychological Services–New Brunswick: <http://rhscaps.rutgers.edu/>]

If you are in need of *physical health* services, please use our readily available services.

[Rutgers Health Services – Newark: <http://health.newark.rutgers.edu/>]

[Rutgers Health Services – New Brunswick: <http://health.rutgers.edu/>]

If you are in need of *legal* services, please use our readily available services: <http://rusls.rutgers.edu/>

Students experiencing difficulty in courses due to *English as a second language (ESL)* should contact the Program in American Language Studies for supports.

[Rutgers–Newark: PALS@newark.rutgers.edu]

[Rutgers–New Brunswick: eslpals@english.rutgers.edu]

If you are in need of additional *academic assistance*, please use our readily available services.

[Rutgers University-Newark Learning Center: <http://www.ncas.rutgers.edu/rlc>

[Rutgers University-Newark Writing Center: <http://www.ncas.rutgers.edu/writingcenter>]

[Rutgers University-New Brunswick Learning Center: <https://rlc.rutgers.edu/>]

[Optional items that many faculty include:

- Students must sign, date, and return a statement declaring that they understand the RU Academic Integrity Policy.

- Students must sign, date, and return a statement declaring that they understand this syllabus.]