

Course Syllabus

Course Information

- **Course Number and Title:** COP 3729 Database 2
- **Credit Hours:** 3 credits
- **Current Academic Term:** FALL 2021

Instructor Information

- **Instructor:** Ray Ready
- **Office:** Remote
- **Office Hours:** T 6:00 PM – 7:00 PM (by appointment)
- **Office Phone:**
- **E-mail:** rready@floridapoly.edu
- **Class Meeting:** T 7:00pm – 9:45 pm, IST 1045

Course Details

- **Course Website:** [Database 2\(FA 2021 COP3729C.01 I&T\) \(instructure.com\)](https://instructure.com/courses/3729/courses/3729C.01)
- **Official Catalog Course Description:**
Datacenter infrastructure and management including technologies such as: virtualization, networking, server consolidation, green IT computing, and network storage configurations are discussed. The utilization of virtualized platforms, networking and infrastructure configurations as well as the deployment, analysis and management of applications are also presented.
- **Prerequisites:** COP 3710 - Database 1
- **Communication/Computation Skills Requirement (6A-10.030):** No
- **Required Texts:**
 - Seven Databases in Seven Weeks – Eric Redmond & Jim Wilson
 - Database Systems – 13 Edition – Carlos Coronel, Steven Morris
- **Equipment and Materials:**
This course is an application-driven introduction to databases. We will use various databases that are presented in the text and will utilize the database systems to complete hands on practice. The course covers designing, building and testing advanced databases using working examples. The format of the course will include lectures by the instructor, class discussions, hands on development, directed readings, and students' presentations. You must use a PC during each class so that you can perform the in class portion of assignments that you will finish outside of class.

Required: Download and install the database platforms from the text 7 Databases in 7 Weeks. Sign up for an AWS account for cloud based databases.

- **Course Objectives:**

The specific objective is for students to understand and apply basic *concepts and methods in database design*. The broader objective is for students hone their ability to *apply modern databases to store and retrieve data for application design*.

- **Course Learning Outcomes:**

Upon successfully completing this course, learners will be able to:

1. Explain the various differences in advanced database platforms.
2. Handle a wide variety of complex information infrastructure issues related to database design, development and implementation.
3. Collaborate as a team member on a multi-level, distributed and sophisticated database project.
4. Understand and recognize various strategic information needs in an organization and assist in developing an IT strategy.

- **Alignment with Program Outcomes:**

	Course Learning Outcome			
Data Science Program Student Outcomes	1	2	3	4
(1) Demonstrate an in-depth knowledge of alternative database design methods and techniques.	X	X	X	
(2) Use a team oriented project to demonstrate ability of the students to take user requirements and apply analysis methods to determine what database platforms, methods and components are needed to provide a complete solution	X	X	X	X
(3) Demonstrate an understanding of how a data center works, what it does, and how it relates to applications of information technology.		X	X	X

	Course Learning Outcome			
Computer Science ABET Student Outcomes	1	2	3	4
(1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	X			
(2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.		X		
(3) Communicate effectively in a variety of professional contexts.			X	
(4) Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.				X
(5) Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.			X	
(6) Apply computer science theory and software development fundamentals to produce computing-based solutions.				X

Academic Support Resources

- **Library:** Students can access the Florida Polytechnic University Library through the student portal [Pulse](#) and [Canvas](#), on and off campus. Students may direct questions to the Success Desk in the Commons or by email, library@floridapoly.edu.
- **ASC:** The Academic Success Center, located in the Commons and at ASC East, provides a range of services. Students may direct questions to success@floridapoly.edu.

Course Policies:

- **Attendance** (see also [University Policy](#))
Students are expected to attend class. If you know that you will miss a class for any reason discuss the situation with your instructor BEFORE the class is missed. Only valid and documented excuses will be considered. Any documentation must be submitted within 1 week of your absence. Class attendance will be taken at every class period. The department considers attendance a vital part of the learning process and as a result, there will be a penalty for missed classes. Also, due to the disruption caused to your classmate's learning process late arrivals will likewise incur a penalty. As a result, this course is implementing the following final grade reduction policy for absences or late arrivals

Number of unexcused missed meetings	Effect on final grade
0 to less than 10 %	No penalty
From 10% up to 20%	1/3 of a Letter Grade reduction
From 20 % up to 30 %	2/3 of a Letter Grade reduction
30% or more	1 Letter Grade reduction

Students Feeling Sick

I am a student; what should I do if I think I may have COVID-19?

Students who are showing symptoms or who have been exposed to COVID-19 are expected to stay in their residences (at home or in their dorm rooms) and immediately notify the FL Poly CARE manager at care@floridapoly.edu. The CARE Manager will work with each student to triage their individual situation and the CARE Manager will notify faculty of students who are not attending courses due to COVID-19 symptoms.

- **Grading Scale:** (See also [University Grading Policy](#)).
Grades will be determined according to the following scale:

A	93% – 100%	B	83% – 85%	C	73% – 75%	D	63% – 65%
A–	90% – 92%	B–	80% – 82%	C–	70% – 72%	D–	60% – 62%
B+	86% – 89%	C+	76% – 79%	D+	66% – 69%	F	0% – 59%

- **Assignment/Evaluation Methods:**

<i>Assignment</i>	<i>Percentage</i>
Discussions	10%
Homework	20%
Exam 1	15%
Exam 2	15%
Final Exam	20%
Final Project	20%
Total	100%

Participation in all course activities is a very important element of this course, is a basic expectation, and counts for part of your grade. Course participation consists of active and respectful involvement in class discussions, presentations, peer feedback, postings, replies, projects, and other interactions. The course grade takes into account quality, quantity, and timeliness of student participation.

- **Late Work/Make-up work:**

Each student must keep current on assignments. *Late assignments are not graded, unless permission has been obtained from the instructor in advance.* Medical emergencies with valid documentation would be about the only exception. Any other documentation will be evaluated on a case by case basis.

University Policies

Basic rules for in the classroom, IST, and Campus

1. We highly recommend, until further notice, that you wear your face-covering during class and throughout the building at all times.
2. Absolutely **no eating or drinking** during class.

Reasonable Accommodations

Florida Polytechnic University is committed to assisting students with disabilities and offering reasonable accommodations to those with documented eligibility. The Office of Disability Services (ODS) coordinates accommodations for students with disabilities in accordance with the ADA Amendments Act of 2008 (ADAAA), the Americans with Disabilities Act of 1990 (ADA), and Section 504 of the Rehabilitation Act of 1973. Reasonable accommodations are determined on an individual basis through an interactive process between you, ODS, and your instructor(s). If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course and communicate with your instructor about your approved accommodations at your earliest convenience. If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring an accommodation, please contact ODS as soon as possible.

The Office of Disability Services (ODS):

DisabilityServices@floridapoly.edu

(863)874-8770

ASC East building

[ODS website: www.floridapoly.edu](http://www.floridapoly.edu) > Student Affairs > Health Wellness > Disability Services

Accommodations for Religious Observances, Practices and Beliefs

The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See [University Policy](#).)

Title IX

Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence and stalking. It is important for you to know that there are resources available if you or someone you know needs assistance. You may speak to your professor, but your professors have an obligation to report the incident to the Title IX Coordinator. It is an educational goal that you feel able to share information related to your life experiences in classroom discussions and in one-on-one meetings. However, it is requirement for university employees to share information with the Title IX Coordinator regarding disclosure. However, please know that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic University [Ombuds Office](#), BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at [Peace River Center](#), 863-413-2707 (24-hour hotline) or 863-413-2708 to schedule an appointment.

Academic Integrity

All students must commit to the highest ethical standards in completion of all academic pursuits and endeavors, whether in classroom or online environments: [Academic Integrity](#).

Student Record of Lectures

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use.

Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidentally, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action).

*Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers **is prohibited**.*

For further information, go to [the Registrar's webpage](#) and click on [HB233 Guidance](#)

Course Schedule

A tentative course calendar is included below.

Week	Topic	Reading/HW
1	Review of Relational Databases (Database 1) Goals, Architecture and database 1 fundamentals	Ch. 1-7 Data Sys

<i>Week</i>	<i>Topic</i>	<i>Reading/HW</i>
2	<i>Overview of Databases</i> Relational NoSQL	<i>Ch.1</i> <i>7 Days</i>
3	<i>Advanced Relational Database</i> PostgreSQL	<i>Ch. 2 – 7 Days Ch. 5 & 8</i> <i>DataSys</i>
4	<i>Advanced Relational Database</i> PostgreSQL Contd.	<i>Ch. 3, HW 1 design and build</i> <i>Retail Marts</i>
5	<i>Key-Value Databases</i> Dynamo	<i>Ch. 7</i> <i>7 Days</i>
6	<i>Key-Value Databases</i> Redis	<i>Ch. 8</i> <i>7 Days</i>
7	<i>Test 1 Review</i> Test 1 during 2 nd hour of class	
8	<i>Document Databases</i> MongoDB	<i>Ch. 4</i> <i>7 Days</i>
9	<i>Document Databases</i> CouchDB	<i>Ch. 5</i> <i>7 Days</i>
10	<i>Column Oriented Databases</i> Hbase	<i>Ch 3 7 Days</i>
11	<i>Graph Databases</i> Neo4J	<i>Ch. 6</i> <i>7 Days</i>
12	<i>Test 2 Review</i> Test 2 during second hour	
13	<i>System Architecture</i> Practical issues in clustering Self-organizing maps, independent component analysis	<i>Ch.12 DataSys</i>
14	<i>Data Centers</i> Connecting Tableau to DW Querying the DW	<i>Ch. 15 DataSys</i> Group Presentations Due
15	<i>Performance Tuning</i>	<i>Ch. 11 DataSys</i> <i>Group Presentations</i>
16	<i>Final Exam</i>	<i>Cumulative</i>

I reserve the right to modify this schedule as required by the progression of the class.

Exercises listed as suggested problems may be used as part of some of the homework assignments and/or quizzes this term.

Final Project

In the final project you will show your knowledge and skills in database design and implementation, using any combination of the different tools and topics discussed throughout the semester applied to an area/field of your interest.

- ***Final Project Report***
Your goal is to submit a cohesive project report that conveys that you have mastered the techniques discussed during the semester.
- ***Final Project Presentation***
An important aspect of doing research is taking time to share your findings with others. We will give everyone 10 minutes to share their final project and summarize their findings. *The final project presentation accounts for 15% of your final project grade.*

Your instructor will provide you with specific guidelines for the final project report and final project presentation shortly after the first few weeks of classes (format and length, call for proposals, reference materials, presentation guidelines and logistics, rubric, etc.)

Important Dates

August 24 – 30	Th-W	Drop/Add Week
August 30	W	Withdrawal Without Academic Penalty Deadline (W assigned)
September 6	M	Labor Day Holiday – No Classes
November 11	W	Veterans Day – No Classes
November 24-26	W-F	Thanksgiving Break – No Classes
December 8	W	Last Day of Classes
December 9-10	F-S	Reading Days - No Classes
December 11, 13-16	M-F	Final Exams
December 22	W	Final Grades Available Online

Sample Rubric for Report and Presentations

The final presentations and reports will be evaluated using the rubrics included below.

Report Rubric

Objective	Category	Below Expectations	Weak	Average	Good	Excellent
	Score	1	2	3	4	5
Students can write professional quality documents	Introduction	Opening is off-topic and inappropriate to the purpose, not concise and no clarity	Opening is somewhat related to the topic and appropriate to the purpose but is not concise and clear	Opening is related to the topic and appropriate to the purpose. Somewhat clear and concise	Opening is related to the topic and appropriate to the purpose. Clear and concise	Strong opening that is clear and concise
	Organization	Disorganized; incorrect format; unclear direction	Somewhat organized; incorrect format; unclear direction	Organized; correct format; unclear direction	Organized; correct format; clear direction	Correct formatting, strong clarity and organization in the development of main points
	Literature Review	Does not present information from any source	Presents information from irrelevant sources representing limited points of view/approaches	Presents information from relevant sources representing limited points of view/approaches	Presents in-depth information from relevant sources representing limited points of view/approaches	Synthesizes in-depth information from relevant sources representing limited points of view/approaches
	Research Design (weighted twice)	Does not provide information on research design	Inquiry design demonstrates misunderstanding of the methodology or theoretical framework	Critical elements of the methodology or theoretical framework are missing, incorrectly developed or unfocused	Critical elements of the methodology or theoretical framework are appropriately developed however, more subtle elements are ignored or unaccounted for	All elements of the methodology or theoretical framework are skillfully developed and may be synthesized from across disciplines or relevant subdisciplines
	Analysis (weighted twice)	Incorrect, Irrelevant, no supporting evidence	Correct, irrelevant, no supporting evidence	Correct, relevant, no supporting evidence	Relevant and correct with supporting evidence	Relevant, correct, complete, incorporates innovative insights
	Next Steps	Missing or content does not support conclusion	Conclusion irrelevant to the findings	Conclusion somewhat relevant to the findings	Conclusion relevant to the findings	Strong conclusion that is clear, complete and compelling
	Grammar & Spelling	Uses language that often impedes meaning due to errors	Uses language that often sometimes meaning due to errors	Uses language that generally conveys meaning to readers with clarity, although writing includes some errors	Uses straightforward language that conveys meaning to readers. Language has few errors	Uses graceful language that communicates meaning to readers with clarity and fluency and is virtually error free
	Reference Style (APA)	Did not follow APA style	Numerous errors in APA style, did not cite sources correctly, formatting issues	Some errors in APA style, cited correctly but formatting issues persist	Minimum errors in style and formatting but does not detract from readability	No errors in APA style
Total points for Report = 50						

Presentation Rubric

Assessment Rubric						
Objective	Category	Below Expectations	Weak	Average	Good	Excellent
	Score	1	2	3	4	5
Students can demonstrate mastery of communication technology	Use of Media	Lack of media detracts from the presentation objective	Misuse of media that detracts from the presentation objective	Use of media barely supports and contributes to the presentation objective	Use of media supports and contributes to the presentation objective	Use of media supports, clarifies and reinforces the presentation objective
	Quality of Slides	Very poor quality. Not enough or too much colors, fonts and animations that detract from project objective	Poor quality. Not enough or too much colors, fonts and animations that detract from project objective	Fonts, colors and animations barely support the presentation objective	Fonts, colors and animations support the presentation objective	Fonts, colors and animations support, clarify and reinforce the presentation objective
Students can develop and deliver a compelling oral talk with relevant facts and information	Opening statement	Opening is off-topic and inappropriate to the purpose, not concise and no clarity	Opening is somewhat related to the topic and appropriate to the purpose but is not concise and clear	Opening is related to the topic and appropriate to the purpose. Somewhat clear and concise	Opening is related to the topic and appropriate to the purpose. Clear and concise	Strong opening that is clear and concise
	Organization	Disorganized; incorrect format; unclear direction	Somewhat organized; incorrect format; unclear direction	Organized; correct format; unclear direction	Organized; correct format; clear direction	Correct formatting, strong clarity and organization in the development of main points
	Literature Review	Does not present information from any source	Presents information from irrelevant sources representing limited points of view/approaches	Presents information from relevant sources representing limited points of view/approaches	Presents in-depth information from relevant sources representing limited points of view/approaches	Synthesizes in-depth information from relevant sources representing limited points of view/approaches
	Analysis	Incorrect, Irrelevant, no supporting evidence	Correct, irrelevant, no supporting evidence	Correct, relevant, no supporting evidence	Relevant and correct with supporting evidence	Relevant, correct, complete, incorporates innovative insights
	Next Steps	Missing or content does not support conclusion	Conclusion irrelevant to the findings	Conclusion somewhat relevant to the findings	Conclusion relevant to the findings	Strong conclusion that is clear, complete and compelling
	Timing	Presentation is too short, insufficient coverage of material	Presentation is too long. Unable to cover all the material	Able to cover all the material within five extra minutes	Utilizes allotted time to provide sufficient coverage of material	Well-paced coverage of material within the allotted time
Students can deliver an oral talk with clarity and appropriate poise	Delivery Techniques	Does not participate in the oral presentation	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.
	Peer Evaluation	5 points				
Total Points = 50						