

C2QA Foundations of Quantum Information Science (QIS101) - Syllabus

Week #1

MON	06/06/22	10:00 AM	12:00 PM	Session 01 - Introducing Quantum Computing
		1:00 PM	3:00 PM	Session 02 - Installing Courseware
		4:00 PM	6:00 PM	Session 02 - Installing Courseware
TUE	06/07/22	10:00 AM	12:00 PM	TA Time
		1:00 PM	3:00 PM	Session 03 - Introducing Python
		4:00 PM	6:00 PM	Session 03 - Introducing Python
WED	06/08/22	10:00 AM	12:00 PM	Session 03 - Introducing Python
		1:00 PM	3:00 PM	Session 04 - Experimental Mathematics
		4:00 PM	6:00 PM	Session 04 - Experimental Mathematics
THU	06/09/22	10:00 AM	12:00 PM	Session 04 - Experimental Mathematics
		1:00 PM	3:00 PM	Session 05 - Algorithmic Efficiency
		4:00 PM	6:00 PM	Session 05 - Algorithmic Efficiency
FRI	06/10/22	10:00 AM	12:00 PM	Session 05 - Algorithmic Efficiency
		1:00 PM	3:00 PM	Facilities Tour - NSLS2
		4:00 PM	6:00 PM	TA Time

Week #2

MON	06/13/22	10:00 AM	12:00 PM	Session 06 - Data Visualization
		1:00 PM	3:00 PM	Session 06 - Data Visualization
		4:00 PM	6:00 PM	Session 07 - Information Theory
TUE	06/14/22	10:00 AM	12:00 PM	Session 07 - Information Theory
		1:00 PM	3:00 PM	Session 08 - Early Quantum Mechanics
		4:00 PM	6:00 PM	Session 08 - Early Quantum Mechanics
WED	06/15/22	10:00 AM	12:00 PM	TA Time
		1:00 PM	3:00 PM	Guest Lecturer - Samuel Stein, Research Associate, Pacific Northwest Lab (Software)
		4:00 PM	6:00 PM	Session 09 - Probability and Statistics
THU	06/16/22	10:00 AM	12:00 PM	Session 09 - Probability and Statistics
		1:00 PM	3:00 PM	Session 09 - Probability and Statistics
		4:00 PM	6:00 PM	Session 10 - Numerical Analysis
FRI	06/17/22	10:00 AM	12:00 PM	Session 10 - Numerical Analysis
		1:00 PM	3:00 PM	Session 10 - Numerical Analysis
		4:00 PM	6:00 PM	TA Time

Week #3

MON	06/20/22	No Classes		Juneteenth Federal Holiday
TUE	06/21/22	10:00 AM	12:00 PM	Session 11 - Complex Algebra
		1:00 PM	3:00 PM	Session 11 - Complex Algebra
		4:00 PM	6:00 PM	Session 12 - Classical Wave Equations
WED	06/22/22	10:00 AM	12:00 PM	Session 12 - Classical Wave Equations
		1:00 PM	3:00 PM	Guest Lecturer - Christie Chiu, Postdoc, Princeton University (Materials)
		4:00 PM	6:00 PM	TA Time
THU	06/23/22	10:00 AM	12:00 PM	Session 13 - Fourier Analysis
		1:00 PM	3:00 PM	Session 13 - Fourier Analysis
		4:00 PM	6:00 PM	Session 14 - Linear Algebra
FRI	06/24/22	10:00 AM	12:00 PM	Session 14 - Linear Algebra
		1:00 PM	3:00 PM	Facilities Tour - CFN
		4:00 PM	6:00 PM	TA Time

Week #4

MON	06/27/22	10:00 AM	12:00 PM	Session 14 - Linear Algebra
		1:00 PM	3:00 PM	Session 14 - Linear Algebra
		4:00 PM	6:00 PM	Session 15 - Vector Algebra
TUE	06/28/22	10:00 AM	12:00 PM	Session 15 - Vector Algebra
		1:00 PM	3:00 PM	Session 16 - Scientific Computing
		4:00 PM	6:00 PM	Session 16 - Scientific Computing
WED	06/29/22	10:00 AM	12:00 PM	Guest Lecturer - Michael Hatridge, Assistant Professor of Physics, University of Pennsylvania (Devices)
		1:00 PM	3:00 PM	Session 16 - Scientific Computing
		4:00 PM	6:00 PM	TA Time
THU	06/30/22	10:00 AM	12:00 PM	Session 17 - Simulation and Modelling
		1:00 PM	3:00 PM	Session 17 - Simulation and Modelling
		4:00 PM	6:00 PM	Session 18 - Differential Equations
FRI	07/01/22	10:00 AM	12:00 PM	Session 18 - Differential Equations
		1:00 PM	3:00 PM	Session 18 - Differential Equations
		4:00 PM	6:00 PM	TA Time

Week #5

MON	07/04/22	No Classes		July 4th Federal Holiday
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TUE	07/05/22	10:00 AM	12:00 PM	Session 19 - Dynamical Systems
		1:00 PM	3:00 PM	Session 19 - Dynamical Systems
		4:00 PM	6:00 PM	Session 20 - Monte Carlo Methods

WED	07/06/22	10:00 AM	12:00 PM	Session 20 - Monte Carlo Methods
		1:00 PM	3:00 PM	Session 20 - Monte Carlo Methods
		4:00 PM	6:00 PM	TA Time

THU	07/07/22	10:00 AM	12:00 PM	Session 21 - Digital Circuits
		1:00 PM	3:00 PM	Session 21 - Digital Circuits
		4:00 PM	6:00 PM	Session 21 - Digital Circuits

FRI	07/08/22	10:00 AM	12:00 PM	Session 22 - Quantum Mechanics
		1:00 PM	3:00 PM	Facilities Tour - RHIC
		4:00 PM	6:00 PM	TA Time

Week #6

MON	07/11/22	10:00 AM	12:00 PM	Session 23 - Quantum Circuits
		1:00 PM	3:00 PM	Session 23 - Quantum Circuits
		4:00 PM	6:00 PM	Session 23 - Quantum Circuits

TUE	07/12/22	10:00 AM	12:00 PM	TA Time
		1:00 PM	3:00 PM	Session 23 - Quantum Circuits
		4:00 PM	6:00 PM	Session 24 - Quantum Algorithms

WED	07/13/22	10:00 AM	12:00 PM	Session 24 - Quantum Algorithms
		1:00 PM	3:00 PM	Guest Lecturer - Baptist Royer, Postdoc, Yale University (Software)
		4:00 PM	6:00 PM	Session 24 - Quantum Algorithms

THU	07/14/22	10:00 AM	12:00 PM	TA Time
		1:00 PM	3:00 PM	Group Presentations (Practice)
		4:00 PM	6:00 PM	Group Presentations (Practice)

FRI	07/15/22	10:00 AM	12:00 PM	Group Presentations
		1:00 PM	3:00 PM	Group Presentations
		4:00 PM	6:00 PM	Closing Ceremony