

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

Date	Time (MDT)	Presenter	Presentation Title	email
Week One: Orientation to the Program (Live Sessions, students will be at TC#111)				
May 19, 2022	9:30 to 10:30 am	Prof. Avery Denny, Diné College https://dinecollege.zoom.us/j/97865907601 Meeting ID: 978 6590 7601	Blessing Ceremony (recording link below) https://dinecollege.zoom.us/rec/share/2NjGxpCMBGriqj75ej_7ReTFxWYBkorvyYpJaezYRRlcjuFfgrpppWHfbQ1cN89D.M3YypSdA0NaFcZM8 Passcode: as+6a2U\$	adenny@dinecollege.edu
	10:30 to 12:30 am	Dr. Shazia Hakim Diné College Introduction to the field work and lab protocols	In person, lab/ green house tour	stabassum@dinecollege.edu
	3:30 – 4:30 pm	Brief Introduction of the team (10 minutes each) <ol style="list-style-type: none"> 1. Dr. Charles Gerba 2. Dr. Bob Arnold 3. Dr. Karletta Chief 4. Dr. Karanikola 5. Ms. Benita Litson 6. Mr. Bryan Neztosie 7. Dr. Shazia T. Hakim https://dinecollege.zoom.us/j/98229111832 Meeting ID: 982 2911 1832	Who we are? The Team(recording link below) https://dinecollege.zoom.us/rec/share/n52Vs8CHkQsJ8xpdvvyjCFFgZjqQXaPdfhVLSW3PbNt-UYqr1iAsCPDDQYxzVyUIn.3P-DvrrngsOS2gXy Passcode: 8@1UaF9b	gerba@ag.arizona.edu rga@arizona.edu kchief@arizona.edu vkaranik@arizona.edu vkaranik@arizona.edu blitson@dinecollege.edu bneztosie@dinecollege.edu stabassum@dinecollege.edu
May 20, 2022 confirm ed	4:00 pm (MST) 5:00pm NN time	Dr. Gerba, University of Arizona https://dinecollege.zoom.us/j/91020760294 Meeting ID: 910 2076 0294	Introduction to Water Quality & Sewage: biology & chemical composition (Recording) https://dinecollege.zoom.us/rec/share/lxXyZq1_Ujd4dGrNZxC-VOppAu1GIMZs_NvTxez5c-bAbEhBplEURrqsdyI-E_A8.rBfCOOuOsoB9kTHY Passcode: 5Z#S#Bj2	gerba@ag.arizona.edu
Week Two: Proposal Design & Writing				

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

May 23, 2022 confirm ed	10:00 am to 11:00 am NN time	Dr. Shazia Hakim, Diné College,	<ul style="list-style-type: none"> • Identification of key research questions • Selection of Presentation Topic & review articles (recording) 	stabassum@dinecollege.edu
May 23, 2022	2:00 to 3:00 pm	Dr. Suzanne L. Russ, Diné College	<ul style="list-style-type: none"> • Why it is important to consider research Ethics? https://dinecollege.zoom.us/j/910111111111 Passcode: 3T^y5Avm 	slruss@dinecollege.edu
May 24, 2022 confirm ed	10:00 am to 11:00 am NN time	Dr. Andrea, Diné College	<ul style="list-style-type: none"> • Elements of Proposal Preparation: work plan, timeline budget. 	
May 25, 2022		Dr. Christine Ami	<ul style="list-style-type: none"> • Indigenous Research Methodology 	cmami@dinecollege.edu
		Students will work on literature search, and proposal design	<ul style="list-style-type: none"> • 	
Week Three: Measurement of Chemicals and trace organics in effluent: reclaimed vs. potable water				
Students will watch the videos; write reflection papers; collect water samples and process them for MPN, IDEXX colilert, and API; work in green house				
May 30 – June 03, 2022				
May 30, 2022	Watch the video	You are not alone. How you will correlate the information in the video with water crises in Navajo Nation?	Explained World's Water Crisis, 17 Apr 2020 https://www.youtube.com/watch?v=C65iqQSCZOY	stabassum@dinecollege.edu
		Summarize the information in the video. Generally describe the relationship between uranium and water in the Navajo Nation. Include barriers and problems that get in the way of providing solutions.	Vice News, "Living Without Water: Contamination Nation", November 24, 2015 https://www.youtube.com/watch?v=qjMLyISkoT0	stabassum@dinecollege.edu

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

		<p>1a, Basic of Chromatography (Video) https://www.youtube.com/watch?v=SnbXQTTHGs4</p> <p>1b. Liquid Chromatography (Text) https://chem.libretexts.org/Bookshelves/Analytical_Chemistry/Supplemental_Modules_(Analytical_Chemistry)/Instrumental_Analysis/Chromatography/Liquid_Chromatography</p> <p>2. High Performance Liquid Chromatography (Video) https://www.youtube.com/watch?v=Qf6060arkqM</p>		
		<p>3. Mass spectroscopy (Video) https://www.youtube.com/watch?v=mBT73Pesioq</p> <p>4. GC MS (Video) https://www.youtube.com/watch?v=4Xaa9WdXVTM</p> <p>5. LCMS (Video) https://www.youtube.com/watch?v=7NEWDmT1sCo</p>		
June 01, 10:30 am to 11:30 am		DR. Robert Arnold , University of Arizona	Lower Colorado River Basin and Water Rights of Native American Tribes	rga@arizona.edu
June 01,		Dr. Shazia Tabassum Hakim, Diné College	Final Topic selection for presentation and first draft due	stabassum@dinecollege.edu
June 03, 9:30 am to 11:00 am		Crystal Tulley-Cordova , Ph.D., M.W.R. Principal Hydrologist Navajo Nation Department of Water Resources Water Management Branch P.O. Box 678, Fort Defiance, AZ 86504 cell (928) 349-1184	Meeting Recording: https://dinecollege.zoom.us/rec/share/VWnMJl6RH75PvVgTM0fh2vHMLauPL8xap9f3Lji7ClIBBe40i3c9GIVkDzRZpFAC.hsaZlbcvksf_Hda	tulley-cordova@navajonnsn.gov
Access Passcode: t9f?uLM^				

Date	Time	Presenter	Presentation Title	email
Week Four: Chemical & Microbial screening of wastewater samples (ASM-Microbe June 9 – 13 Washington DC)				
Students will report to Ms. Allison Begay at learning center, watch the videos; write reflection papers; collect water samples and work in green house				
June 06, 2022	Watch the video and submit a reflection paper, whet you learned?	<p>Dr. Karanikola, University of Arizona</p> <p>Here is the presentation of the TrOC, what they are? Where we find them? Why do we care treating them? Detection methods and treatments. Added are supplementary readings for the students at the end of the presentation.</p> <p>The link below is the PowerPoint with the recording. But the attached power point has also playback at every slide (on bottom right corner there is a little arrow)</p>	<p>TrOC :Techniques & methodologies</p> <p>For recording Adobe Acrobat has been used so You can view "TROCs Presentation_2 (1).mp4" at:</p> <p>https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:5448bb5c-6ea1-455a-afda-515e93357c6f</p>	vkaranik@arizona.edu
June 07, 2022	Watch the video and submit a reflection paper, whet you learned?	<p>Dr. Karanikola, University of Arizona</p>	<p>Using Adobe Acrobat. You can view "PFAS Presentation for University 1.mp4" at:</p> <p>https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:f6429dd6-faeb-4fc6-a69b-b047be943799</p>	vkaranik@arizona.edu
June 08, 2022	Watch the video	<p>Microbial identification and biochemical characterization: spot tests, API strips https://www.youtube.com/watch?v=BDVpQLytkkk</p> <p>MPN (Most Probable Number) technique https://www.youtube.com/watch?v=A3mmuV1tc4</p> <p>Test for coliforms (MPN) using Quanti-tray method https://www.youtube.com/watch?v=YQbYOPkVVPC</p>	<p>Write down the reflection papers on</p> <ol style="list-style-type: none"> 1. What is the difference between MPN (most probable number) technique and streak plate method? 2. Why we need to do coliform test for water quality? What is the significance? What are the EPA standards for Coliform counts in Navajo Nation as compare to rest of Arizona? 	stabassum@dinecollege.edu

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

			3. What are the different methods available for coliform testing in the field?	
June 09, 2022	Watch the video	<p>Antimicrobial susceptibility testing:</p> <ol style="list-style-type: none"> 1. Broth dilution method https://www.youtube.com/watch?v=nxCU9_XyXsE 2. Agar dilution method https://www.youtube.com/watch?v=6N17ds8pDY4 3. Kirby and Bauer disk diffusion method https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=172394&section=4.1 4. E-test strips method https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=172394&section=2.1 <p>https://www.youtube.com/watch?v=K1b9-gJTRkw</p>	<p>Understand serial dilution method: 2 fold, 10 fold, 100 fold</p> <p>Should be able to explain the procedure and its importance in MPN technique</p>	stabassum@dinecollege.edu
June 10, 2022	Watch the videos and write down reflection paper on each of them	<p>Dr. Karanikola, University of Arizona</p> <p>Wastewater Quality Control: "Wastewater Treatment recorded lecture.mp4" at: https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:c1986318-5172-4b0d-8259-247b4a0ea4c0</p> <p>Water reuse Treatment recorded lecture.mp4" at: https://arizona.zoom.us/rec/share/8vwfVKCBolezM6wMBSKZ6pwUBguHWw6-wl3aFubGktsdtIsQUXhYyomUpYUa-ptg.70_w2Ep2uomuZMSl</p> <p>Membrane Process recorded lecture at: https://arizona.zoom.us/rec/share/vYsrkYStJGfMqb5Lw4zruRlxtVBB31S7PdClczmfisxa0KikNMmQzqRTbQQK2Vs.00VmneUh_9LQ6qpA</p>	<p>Wastewater Quality Control, Treatment, rapid sand or carbon filtration</p> <p>Water reuse treatment, reclamation</p> <p>Nanofiltration (NF), Combination of microfiltration/nanofiltration (MF/NF)</p>	vkaranik@arizona.edu

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

Date	Time	Presenter	Presentation Title	Email
Week Five: Introduction to Molecular Bio-techniques Lab & laboratory safety				
Students will report to Ms. Allison Begay at learning center, watch the videos; write reflection papers; collect water samples and work in green house, initial draft of the proposal due on June 17th.				
June 13, 2022		<ul style="list-style-type: none"> • Lab. Safety/ chemical safety/ biosafety https://www.youtube.com/watch?v=FFNtlmC4xqs&list=PLMqYvV22wXlAb3FZ9fgleq6ejcyJtHT4w https://www.youtube.com/watch?v=acRXhnCi3dc https://www.youtube.com/watch?v=GjAD83B4JaY https://www.youtube.com/watch?v=33t1_h9MSWo https://www.youtube.com/watch?v=q_C6xq7j-kg • Measuring Volume/ Mass/ Solutions https://sciencing.com/make-one-percent-bsa-solution-8623641.html https://chem.libretexts.org/Courses/University_of_Arkansas_Little_Rock/Chem_1402%3A_General_Chemistry_1_(Belford)/Text/4%3A_Stoichiometry%3A_Quantitative_Information_about_Chemical_Reactions/4.4%3A_Measuring_Concentrations_of_Solutions • Preparation of Stock Solutions and Biological Buffers, Preparing Agarose Gels. https://www.sigmaaldrich.com/US/en/technical-documents/protocol/genomics/nucleic-acid-gel-electrophoresis/nucleic-acid-electrophoresis 		stabassum@dinecollege.edu

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

		https://www.sigmaaldrich.com/US/en/technical-documents/protocol/protein-biology/gel-electrophoresis/tae-and-tbe-running-buffers-recipe		
		<ul style="list-style-type: none"> Literature search, initial review draft done 		
June 17, 2022		DR. Robert Arnold, University of Arizona	Presentation 2--Trace organics in wastewater	rga@arizona.edu
Date Time Presenter Presentation Title Email				
Week Six: Continuation of Week Five Students will report to Allison Begay at learning center, watch the videos; write reflection papers; collect and process water samples, learn specie identification and work in green house				
June 20, 2022	9:00 to 10:00 am Navajo Nation time	Dr. Shazia Hakim, Diné College	<ol style="list-style-type: none"> DNA finger printing: How does it work? Restriction Fragment Length Polymorphism (RFLP) 	stabassum@dinecollege.edu
	6:00- 8:00 pm Navajo Nation time	Dr. Shazia Hakim, Diné College	<ol style="list-style-type: none"> Recombinant DNA molecules, Genetic Shifts & Drifts with reference to COVID variants & sewage/ wastewater SNPs 	stabassum@dinecollege.edu

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

		Dr. Jennifer Weidhaas, University of Utah		
		Mr. Nelson, NAU (Healthy water, Healthy People)		
Date	Time	Presenter	Presentation Title	<u>E mail</u>
Week Seven: Wastewater /Sewage Treatment background with reference to Navajo Reservation, locations				
June 27, 2022		Dr. Bob Arnold Question & Answer session from Presentation 1, 2 & 3	Live session	rga@arizona.edu
		Dr. Bob Arnold Question & Answer session		
		Wayne O'Danielle (DC)	Alternative ways: Water harvesting	
	3:00 pm Navajo	Wendell Murphy, Operations Engineer, NTUA	Navajo Nation and other indigenous communities: how they are fighting with water scarcity	
Date	Time	Presenter	Presentation Title	<u>email</u>
Week Eight: Water treatment unit & Effluent polishing				
July 04, 2022	Recorded Lectures	Dr. Karanikola, University of Arizona	Wastewater Quality Control, Treatment, rapid sand or carbon filtration	vkaranik@arizona.edu Recorded video lectures
		Wastewater Quality Control: "Wastewater Treatment recorded lecture.mp4" at: https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:c1986318-5172-4b0d-8259-247b4a0ea4c0	Water reuse treatment, reclamation	

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

		Water reuse Treatment recorded lecture.mp4" at: https://arizona.zoom.us/rec/share/8vwfVKCBolezM6wMBSKZ6pwUBguHWw6-wl3aFubGktsdtIsQUXhYyomUpYUa-ptg.70_w2Ep2uomuZMSL Membrane Process recorded lecture at: https://arizona.zoom.us/rec/share/vYsrkYStJGfMqb5Lw4zruRlxtVBB31S7PdClczmfisxa0KIkNMmQzqRTbQQK2Vs.00VmneUh_9LQ6qpA	Nanofiltration (NF), Combination of microfiltration/nanofiltration (MF/NF)	
		Field work		
Date	Time	Presenter	Presentation Title	email
Week Nine: @ University of Arizona (July 10 – 16, 2022) Water Research Labs				
July 11, 2022		Dr. Karletta, University of Arizona (live session)	Water Scarcity in Navajo Nation Possible ways of fighting drought (recording link)	kchief@arizona.edu
		Dr. Arnold's Lab., University of Arizona	Wastewater as a source of water pollution	rga@arizona.edu
		Dr. Gerba, University of Arizona		
	4:00 pm Navajo Nation time	Ms. Benita Litson, Diné College,	Effects of drought and water scarcity on our agriculture/ irrigation land vs availability of healthy food for the communities Potential economic impact of unavailability of water for agriculture in the Navajo Nation and possible alternative ways	blitson@dinecollege.edu

**NIFA-USDA-TCRGP Undergraduate Student Internship Program (USIP) Summer 2022
Preliminary Agenda May 16 – July 25, 2021 (10 Weeks)**

Date	Time	Presenter	Presentation Title	email
Week Ten: Hypothesis-driven presentations on research experiences				
July 18, 2022	6:00 pm Navajo Nation time	Student # 1		
		Student # 2		
		Student # 3		
	6:00 pm Navajo Nation time	Student # 4		
		Student # 5		
		Student # 6		
		Dr. Shazia Hakim, Diné College, Ms. Benita Litson, Diné College	Wrap up & Final Assessment Due	
		All students, Instructors & Investigators	Concluding Remarks	

- Most of the presentations will be recorded presentations, while, time and zoom links for the live sessions will be shared separately.
- Time and dates can slightly shuffle.
- All text material and link to the appropriate resources will be provided by the presenter(s) before/ during their presentation