ROMAN MANETSCH

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EDUCATION / EMPLOYMENT HISTORY

Education

6/1998 Diploma in Chemistry, University of Basel (Switzerland), Studies in Chemistry (main subject) and Biology (minor subject), Advisor: Professor Wolf-Dietrich Woggon
Thesis: *Synthese potentieller Inhibitoren für die β-Carotin 15,15'-Dioxygenase* (*Synthesis of Potential Inhibitors of the Enzyme β-Carotene* 15,15'-Dio*xygenase)*

10/2002 Ph.D. in Chemistry, Institute of Organic Chemistry at the University of Basel (Switzerland), Advisor: Professor Wolf-Dietrich Woggon and Co-Advisor: Professor Jean-Louis Reymond (Department of Chemistry and Biochemistry at the University of Bern (Switzerland))
Thesis: *Transition-State-Analoge für die Identifizierung des Enzyms Tocopherol-Cyclase und für die Herstellung katalytischer, monoklonale Antikörper* (*Transition State Analogues for the Identification of the Enzyme Tocopherol Cyclase and for the Preparation of Catalytic Monoclonal Antibodies*)

Employment

11/2002 - 05/2005 Postdoctoral Fellow with K. Barry Sharpless, The Scripps Research Institute, La Jolla (CA)

08/2005 - 07/2011 Assistant Professor, Department of Chemistry, College of Arts and Science, University of South Florida (USF), Tampa (FL)

08/2011 - 08/2014 Associate Professor, Department of Chemistry, College of Arts and Science, University of South Florida (USF), Tampa (FL)

12/2012 - 10/2013 Sabbatical Researcher, Center for Proteomic Research, Novartis Pharma AG, Basel, Switzerland

09/2014 - present Associate Professor, Department of Chemistry and Chemical Biology, College of Science and Department of Pharmaceutical Sciences, Bouvé College of Health Sciences, Northeastern University (NEU), Boston (MA); Faculty Fellow, Center for Drug Discovery, Northeastern University (NEU), Boston (MA)

Overarching Research Theme

Over the years the Manetsch group has focused on conducting highly collaborative medicinal chemistry research aimed at addressing important unmet needs for human health (malaria, antibiotic resistance, etc.). The lab's approach is to bring their expertise in synthetic organic chemistry and analytical medicinal chemistry to collaborative research projects that leads to high impact medicinal chemistry research projects, which have proven to be excellent training groups for student looking to pursue a career in pharmaceutical chemistry.

Research Summary

The research interests of the Manetsch laboratory focus on organic, bioorganic, and click chemistry addressing fundamental aspects and diverse applications of medicinal chemistry of anti-infectives, as well as chemical probes for the study of specific proteins in complex biological matrices. Using synthetic chemistry in close conjunction with liquid chromatography and mass spectrometry detection (LC-MS and LC-MS/MS), the Manetsch laboratory developed kinetic Target-Guided Synthesis (TGS), a fragment-based lead discovery strategy, targeting protein-protein interactions associated with apoptosis. This LC-MS-based method is currently applied for the discovery of inhibitory agents or probe molecules to target malaria, amoebic, or bacterial infections.

The Manetsch laboratory is also interested in establishing reliable synthetic routes for the preparation of natural products or highly functionalized analogues with anti-infective activity. The anti-biotic streptothricin scaffold has been overlooked by the synthetic chemistry community until now. The Manetsch laboratory developed a convergent, diversity-enabling total synthesis of natural product streptothricin F, which allows for the installation of practical divergent steps for medicinal chemistry exploits. Key features of the synthetic approach include a Burgess reagent-mediated 1,2-anti-diamine installation, diastereoselective azidation of a lactam enolate, and a mercury (II) chloride-mediated desulfurization-guanidination. The recently disclosed synthesis represents the second total synthesis of streptothricin F, and the first through a diversity-enabling convergent route (the longest linear sequence of 19 steps, with 35 total steps, and 0.40% overall yield). With the new synthetic approach, the Manetsch laboratory has shown that streptothricin F has great promise as a broadly active antibiotic scaffold ripe for optimization. Accordingly, the Manetsch laboratory and colleagues are pursuing medicinal chemistry-guided analog generation of streptothricin F to explore synthetic analogs for potential therapeutic

Synthetic routes also enable the preparation of focused compound libraries required for detailed structure-activity and structure-property relationship studies (SAR and SPR, respectively). The Manetsch laboratory implemented LC-MS-based property assays and pharmacokinetics to determine key physicochemical properties of small molecules. Using this hit-to-lead progression strategy, *in vivo* efficacious anti-malarial, anti-leishmanial, anti-amoebic, or anti-bacterial (Gram-positive and/or Gram-negative) agents have been developed. For example, for approximately half a century, 4(1*H*)-quinolone endochin, ICI56,780, WR243246, and analogues thereof were known to be causal prophylactic and potent erythrocytic stage agents in avian but not in mammalian malaria models. In close collaboration with parasitology and pharmacology teams, our hit-to-lead optimization efforts led to 4(1*H*)-quinolones P4Q-391 and ELQ-300 with superb *in vivo* antimalarial activity (99% parasitemia suppression on day six post exposure at < 3 mg/kg doses) proving to be curative with all the mice surviving a *Plasmodium berghei* infection after 30 days. With the support of the non-profit organization Medicines for Malaria Venture, the frontrunner compound ELQ-300 entered preclinical development in 2013.

As a third research field, the Manetsch laboratory developed chemical tools to covalently label specific proteins in complex mixtures or entire proteomes. Various photoactivatable probes as well as cyclic thiosulfinates are currently used to crosslink proteins related to energy metabolism and signal transduction. Artemisinin-, primaquine-, and chloroquine-based probes are currently under development to elucidate the mechanisms of antimalarial drug resistance in greater detail.

Honors and Awards

2002 Ph.D. Summa Cum Laude, University of Basel
2003 Swiss National Science Foundation, Postdoctoral Fellowship

2003 Novartis Foundation (formerly the Ciba-Geigy Jubilee Foundation), Postdoctoral Fellowship
2004 Swiss National Science Foundation, Postdoctoral Fellowship
2012 Excellence in Innovation Award, University of South Florida

RESEARCH ACTIVITIES

Peer Reviewed Publications

(Corresponding author(s) is(are) indicated with asterisk(s)*)

59) Nacheva, K P; Kulkarni, S S; Kassu, M; Monastyrskyi, A; Iyamu I D; Namelikonda, N; Tipton J D, Hu, X, Wang, H-G, Manetsch, R*. Going Beyond Binary: Rapid Identification of Protein–Protein Interaction Modulators Through Multi-Component Sulfo-Click Kinetic Target-Guided Synthesis Approach. Manuscript submitted.

58) Van Horn, K S; Clark J; Mutka T S; Lacrue, A N; Ebert, D; Wu, W; Casandra, D R; Namelikonda, N; Yacoub, J; Zhao, Y; Ruecker, A; Delves, M; Sinden, R; Sigal, M; Knapp, S; Floyd, D; Waterson, D; Burrows, J N; Duffy, J; DeRisi, J L; Kyle, D E; Guy, R K; Manetsch, R*. Optimization of Asymmetric Dihydropyridines as Antimalarials. Manuscript in preparation.

57) Md, A H; Sarin, R S; Donnelly, D P; Miller, B C; Salisbury, J P; Conway, J B; Watson, S; Winters, J N; Alam, N; Sivasankar, D; Ponmudiyan, A C; Gawde, T; Kannapadi, S; Auclair, J R; Makowski, L; Petsko, G A; Ringe, D; Greenblatt, D J; Ondrechen, M J; Chen, Y; Manetsch, R; Agar, J N*. Protein crosslinking as a therapeutic strategy for SOD1-related ALS. Manuscript submitted (bioRxiv).

56) Siegel, S; Rivero, A; Adapa, S R; Wang CQ; Manetsch, R; Jiang, R H Y*; Kyle, D E*. Mitochondrial Heteroplasmy is Responsible for Atovaquone Drug Resistance in 2 *Plasmodium falciparum*. Manuscript submitted (bioRxiv).

55) Smith, KP; Kang, Y; Green, A; Dowgiallo, M; Miller, B; Chiaraviglio, L; Truelson, K; Zulauf, K; Rodriguez, S; Manetsch, R; Yu, E*, Kirby, J*. Profiling the *in vitro* and *in vivo* activity of streptothricin F against carbapenem-resistant *Enterobacteriaceae*: a historic scaffold with a novel mechanism of action. Manuscript submitted (bioRxiv).

54) Dowgiallo, M; Miller, B; Kassu, M; Smith, KP; Fetigan, A; Guo, J; Kirby, J; Manetsch, R*. The convergent total synthesis of streptothricin F. *Chem Sci* **2022**; 13, 3447-3453.

53) Iyamu, I D; Zhao Y; Parvatkar P T; Roberts B F; Casandra D R; Wojtas L; Kyle D E; Chakrabarti D; Manetsch R*. Structure-activity and structure-property relationship studies of spirocyclic chromanes with antimalarial activity. *Bioorg Med Chem* **2022**; 57, 116629.

52) Maher S P; Vantaux A; Cooper C A; Chasen N M; Cheng W T; Joyner C J; Manetsch R; Witkowski B; Kyle D. A phenotypic screen for the liver stages of *Plasmodium vivax*. *Bio Protoc* **2021**; 11, e4253.

51) Parvatkar, P T; Smotkin, E S; Manetsch, R*. Total Synthesis of (±)-Decursivine *via* BINOL-Phosphoric Acid Catalyzed Tandem Oxidative Cyclization. *Sci Rep* **2021**; 11, 19915.

50) Kim, C; Kassu, M; Smith, KP; Kirby, JE; Manetsch, R*. Pyrazole-Thiazole Core-Containing Analogs Exhibit Adjunctive Activity with Meropenem against Carbapenem-Resistant Enterobacteriaceae (CRE). *ChemMedChem* **2021**; 16, 2775–2780.

49) Monastyrskyi, A; Brockmeyer, F; LaCrue, A N; Maignan, J R; Casandra, D; Mutka, T S; Sherwin Mashkouri, S; Kyle, D E; Manetsch, R*. Aminoalkoxycarbonyloxymethyl Ether

Prodrugs with a pH-Triggered Release Mechanism: A Case Study Improving Solubility, Bioavailability, and Efficacy of Antimalarial 4(1*H*)-Quinolones with Single Dose Cures. *J Med Chem* **2021**; 64, 6581–6595.

48) Lichorowic, C L; Zhao, Y; Maher, S P; Padín-Irizarry, V; Mendiola, V C; de Castro, S T; Worden, J A; Casandra D; Kyle, D E; Manetsch R*. Synthesis of Mono- and Bis-peroxide-bridged Artemisinin Dimers to Elucidate the Contribution of Dimerization to Antimalarial Activity. *ACS Infect Dis* **2021**; 7, 2013–2024.

47) Aluri, K C; Hossain, M A; Kanetkar, N; Miller, B C; Dowgiallo, M G; Sivasankar, D; Sullivan, M R; Manetsch; R, Konry, T; Ekenseair, A; Agar*, J N. Cyclic thiosulfinates as a novel class of disulfide cleavable cross-linkers for rapid hydrogel synthesis. *Bioconjugate Chemistry* **2021**; 32, 584–594.

46) Tillery, L; Barrett, K; Goldstein, J; Lassner, J W; Osterhout. B; Tran, N L; Xu, L; Young, R M; Craig, J; Chung, I; Dranow, D M; Abendroth, J; Delker, S L; Davies, D R; Mayclin, S J; Clahoun, B; Bolejack, M J; Staker, B; Subramanian, S; Phan, I; Lorimer, D D; Myler, P J; Edwards, T E; Kyle, D E; Rice, C A; Morris, J C; Leahy, J W; Manetsch R; Barett; L K, Smith, C L; Van Voorhis, W C*. *Naegleria fowleri*: protein structures to facilitate drug discovery for the deadly, pathogenic free-living amoeba. *PLoS One* **2021**; 16(3): e0241738.

45) Krohn-Brennan, T; Manetsch, R; O'Doherty, G A; Kirby J E*. New Strategies and Structural Considerations in Development of Therapeutics for Carbapenem-Resistant *Enterobacteriaceae*: New Therapies for CRE. *Transl Res* **2020**; 220, 14–32.

44) Smith, K P; Dowgiallo, M D; Chiaraviglio, L; Parvatkar, P; Kim, C; Manetsch, R; Kirby, J E*. A Whole-Cell Screen for Adjunctive and Direct Antimicrobials Active Against Carbapenem-Resistant *Enterobacteriaceae*. *SLAS Discov*. **2019**; 24, 842–853.

43) Parvatkar, P T*; Manetsch R*; Banik, B K*. Metal-Free Cross-Dehydrogenative Coupling (CDC): Molecular Iodine as a Versatile Catalyst/Reagent for CDC Reaction (Review). Chemistry. *Chem Asian J* **2019**; 14, 6–30.

42) Donnelly, D P; Dowgiallo, M G; Salisbury, J P; Krishna, C; Iyengar, S; Chaudhari, M; Mathew, M; Miele, I; Auclair, J R; Lopez, S A, Manetsch R, Agar J N*. Cyclic Thiosulfinates and Cyclic Disulfides Selectively Crosslink Thiols While Avoiding Modification of Lone Thiols. *J Am Chem Soc* **2018**; 140, 7377–7380.

41) Neelarapu, R; Maignan, J R; Lichorowic, C L; Monastyrskyi, A; Mutka, T S; Lacrue, A N; Blake, L D; Casandra, D; Mashkouri, S; Burrows, J N; Manetsch, R* Design and synthesis of orally bioavailable piperazine substituted 4(1*H*)–quinolones with potent antimalarial activity: structure−activity and structure−property relationship studies. *J Med Chem* **2018**; 61, 1450–1473.

40) Kumar, A B; Manetsch, R*. Ammonia-free Synthesis of 3-Trifluoromethyl-3-Phenyl-diaziridine. *Synth Commun* **2018**; 48, 626–631.

39) McQueen, A; Blake, L D; Azhari, A; Kemp, M T; McGaha, T W Jr; Namelikonda, N; Larsen, R W; Manetsch, R; Kyle, D E*. Synthesis, characterization, and cellular localization of a fluorescent probe of the antimalarial 8-aminoquinoline primaquine. *Bioorg Med Chem* **2017**; 27, 4597–4600.

38) Namelikonda, N K; Monastyrskyi, A; Manetsch, R*. Scalable Multigram Syntheses of Antimalarial 4(1*H*)-Quinolones ELQ-300 and P4Q-391. *Eur J Org Chem* **2017**; 23, 3328–3334.

37) Blake, L D; Johnson, M E; Siegel, S V; McQueen, A; Iyamu, I D; Shaikh, A K; Shultis, M W; Manetsch, R; Kyle, D E*. Menoctone resistance in malaria parasites is conferred by M133I

mutations in cytochrome b that are transmissible through mosquitoes. *Antimicrob Agents Chemother* **2017**; 61, AAC.00059-17. E00689-17/13.

36) Brockmeyer F, Manetsch R*. Progress in the Optimization of 4(1*H*)-Quinolone Derivatives as Antimalarials Targeting the Erythrocytic, the Exoerythrocytic and the Transmitting Stages of the Parasite (Review). *Chimia* **2017**; 71, 213–219.

35) Fleeman R, Van Horn K S, Barber M M, Burda W N, Flanigan D L, Manetsch R*, Shaw L N*. Characterizing the Antimicrobial Activity of N^2,N^4-Disubstituted Quinazoline-2,4-Diamines Towards Multidrug Resistant *Acinetobacter baumannii*. *Antimicrob Agents Chemother* **2017**; AAC.00059-17.

34) Maignan J R, Lichorowic C L, Giarrusso J, Blake L D, Casandra D, Mutka T S, LaCrue A N, Burrows J N, Willis P A, Kyle D E, Manetsch R*. ICI 56,780 Optimization: Structure-Activity Relationship Studies of 7-(2-Phenoxyethoxy)-4(1*H*)-quinolones with Antimalarial Activity. *J Med Chem* **2016**; 59, 6943–6960.

33) Roberts B F, Iyamu I D, Lee S, Lee E, Ayong L, Kyle D E, Yuan Y, Manetsch R, Chakrabarti D*. Spirocyclic Chromanes Exhibit Antiplasmodial Activities and Inhibit All Intraerythrocytic Life Cycle Stages. *Int J Parasitol Drugs Drug Resist* **2016**; 6, 85–92.

32) Kumar A B, Tipton J D, Manetsch R*. 3-Trifluoromethyl-3-aryldiazirine Photolabels with Enhanced Ambient Light Stability. *Chem Commun* **2016**; 52, 2729–2732.

31) Zhu X, Van Horn K S, Barber M M, Yang S, Wang M Z, Manetsch R, Werbovetz K A. SAR Refinement of Antileishmanial N^2,N^4-Disubstituted Quinazoline-2,4-diamines. *Bioorg Med Chem* **2015**; 23, 5182–5189.

30) Mahajan S, Manetsch R, Merkler D J, Stevens S M Jr.* Synthesis and Evaluation of a Novel Adenosine-ribose Probe for Global-scale Profiling of Nucleoside and Nucleotide-binding Proteins. *PLoS One*, **2015**; 10, e0115644.

29) Monastyrskyi A, Namelikonda N K, Manetsch R*. Metal-Free Arylation of Ethyl Acetoacetate with Hypervalent Diaryliodonium Salts: an Immediate Access to Diverse 3-Aryl-4(1*H*)-Quinolones. *J Org Chem* **2015**; 80, 2513**–**25020

28) Cross R M, Flanigan D L, Monastyrskyi A, LaCrue A N, Saenz F E, Maignan J R, Mutka T S, White K L, Shackleford D M, Bathurst I, Fronczek F R, Wojtas L, Guida W C, Charman S A, Burrows J N, Kyle D E, Manetsch R*. Orally Bioavailable 6-Chloro-7-methoxy-4(1*H*)-quinolones Efficacious Against Multiple Stages of *Plasmodium*. *J Med Chem* **2014**; 1693**–**1705.

27) Monastyrskyi A, Kyle D E, Manetsch R*. 4(1*H*)-Pyridone and 4(1*H*)-Quinolone Derivatives as Antimalarials with Erythrocytic, Exoerythrocytic, and Transmission Blocking Activities (Review). *Curr Top Med Chem* **2014**; 1693**–**1705.

26) Campbell C O, Santiago D N, Guida W C, Manetsch R, Adams J H*. *In silico* Characterization of an Atypical MAPK Phosphatase of *Plasmodium falciparum* as a Suitable Target for Drug Discovery. *Chem Biol Drug Des* **2014**; 84, 158**–**168.

25) Van Horn K S, Zhu X, Pandharkar T, Yang S, Vesely B, Vanaerschot M, Dujardin J-C, Rijal S, Kyle D E, Wang M Z, Werbovetz Karl, Manetsch R*. Antileishmanial Activity of a Series of N^2,N^4-disubstituted quinazoline-2,4-diamines. *J Med Chem* **2014**; 57, 5141–5156; [Van Horn K S, Zhu X, Pandharkar T, Yang S, Vesely B, Vanaerschot M, Dujardin J C, Rijal S, Kyle D E, Wang M Z, Werbovetz K A, Manetsch R*. Correction to Antileishmanial Activity of a Series of *N*(2),*N*(4)-Disubstituted Quinazoline-2,4-diamines. *J Med Chem* **2016**; 59, 775].

24) Kumar A B, Manetsch R*. Regioselective, Mild and Robust *O*2',*O*3'-Deacetylations of Peracetylated Ribonucleosides Using Tetra-*n*-butylammonium Fluoride. *Eur J Org Chem* 2014; 3551–3555.
23) Van Horn K S, Burda W N, Fleeman R, Shaw L N*, Manetsch R*. Antibacterial Activity of a Series of N^2,N^4-Disubstituted Quinazoline-2,4-diamines. *J Med Chem* **2014**; 57, 3075–3093.
22) Sáenz F E, LaCrue A N, Cross R M, Maignan J R, Udenze K O, Manetsch R, Kyle D K*. 4-(1*H*)-Quinolones and 1,2,3,4-Tetrahydroacridin-9(10*H*)-ones Prevent the Transmission of *Plasmodium falciparum* to *Anopheles freeborni*. *Antimicrob Agents Chemother* **2013**; 57, 61887–6195.
21) LaCrue A N, Sáenz F E, Cross R M, Udenze K O, Monastyrskyi A, Stein S, Mutka T S, Manetsch R, Kyle D E*. 4(1*H*)-Quinolones with Liver Stage Activity Against *Plasmodium berghei*. *Antimicrob Agents Chemother* **2013**; 57, 417–424.
20) Nilsen A, LaCrue A, White K. L , Forquer I P, Cross R M, Marfurt J, Mather M W, Delves M J, Shackleford D M, Sáenz F E, Morrisey J M, Steuten J, Mutka T, Li Y, Wirjanata G, Ryan E, Duffy S, Kelly J X, Sebayang B F, Zeeman A-M, Noviyanti R, Sinden R E, Kocken C H M, Price R N, Avery V M, Angulo-Barturen I, Jiménez-Díaz M B, Ferrer S, Herreros E, Sanz L M, Benito F J G, Bathurst I, Burrows J, Siegl P, Guy R K, Winter R W, Vaidya A B, Charman S A, Kyle D E, Manetsch R*, Riscoe M K*. Quinolone-3-diarylethers: A New Class of Drugs for a New Era of Malaria Eradication. *Sci Transl Med* **2013**; 5, 177ra37.
19) Kulkarni S S, Hu X, Manetsch R*. A Simple Base-mediated Amidation of Aldehydes with Azides. *Chem Commun* **2013**; 49, 1193–1195.
18) Nacheva K P, Maza W A, Myers D Z, Fronczek F R, Larsen R W, Manetsch R*. Fluorescent Properties and Resonance Energy Transfer of 3,4-Bis(2,4-difluorophenyl)-maleimide. *Org Biomol Chem* **2012**; 10, 7840–7846.
17) Kumar A B, Anderson J M, Melendez A L, Manetsch R*. Synthesis and Structure-Activity Relationship Studies of 1,3-Disubstituted 2-Propanols as BACE-1 Inhibitors. *Bioorg Med Chem Lett* **2012**; 22, 4740–4744.
16) Namelikonda N K, Manetsch R*. Sulfo-Click Reaction *Via In Situ* Generated Thioacids and Its Application in Kinetic Target-Guided Synthesis. *Chem Commun* **2012**; 48, 1526–1528.
Article has been published in the "Emerging Investigators 2012" issue.
15) Cross R M, Namelikonda N K, Mutka T S, Luong L, Kyle D E, Manetsch R*. Synthesis, Antimalarial Activity, and Structure-Activity Relationship of 7-(2-Phenoxyethoxy)-4(1*H*)-quinolones. *J Med Chem* **2011**; 54, 8321–8327.
14) Kumar A B, Anderson J M, Manetsch, R*. Design, Synthesis and Photoactivation Studies of Fluorous Photolabels. *Org Biomol Chem* **2011**; 9, 6284–6292.
13) Cross M R, Maignan J R, Mutka T S, Luong L, Sargent J, Kyle D K, Manetsch R*. Optimization of 1,2,3,4-Tetrahydroacridin-9(10*H*)-ones as Antimalarials Utilizing Structure-Activity and Structure-Property Relationships. *J Med Chem* **2011**; 54, 4399–4426.
12) Kulkarni S S, Hu X, Doi K, Wang H-G, Manetsch R*. Screening of Protein-Protein Interaction Modulators via Sulfo-Click Kinetic Target-Guided Synthesis. *ACS Chemical Biology* **2011**; 6, 724–732.
Appeared in the list of 20 "most read" ACS Chemical Biology articles in the entire year of 2011.
11) Cross R M, Manetsch R*. Divergent Route to Access Structurally Diverse 4-Quinolones via Mono or Sequential Cross-Couplings. *J Org Chem* **2010**; 75, 8654–8657.
10) Cross M R, Monastyrskyi A, Mutka T S, Burrows J N, Kyle D K, Manetsch R*. Endochin Optimization: Structure-Activity and Structure-Property Relationship Studies of 3-Substituted

2-Methyl-3(1*H*)-quinolones with Antimalarial Activity. *J Med Chem* **2010**; 53, 7076–7094.

9) Hu X, Manetsch R*, Kinetic Target-Guided Synthesis (Review). *Chem Soc Rev* **2010**, 39, 1316–1324.
8) Hu X, Sun J, Wang H-G, Manetsch R*. Bcl-X_L-Templated Assembly of Its Own Protein-Protein Interaction Modulator from Fragments Decorated with Thio Acids and Sulfonyl Azides. *J Am Chem Soc* **2008**; 130, 13820–13821.
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-----Publications Prior Independent Career at the University of South Florida-----

5) Radic Z, Manetsch R, Krasinski A, Raushel J, Yamauchi J, Garcia C, Kolb H C, Sharpless K B, Taylor P*. Molecular basis of interactions of cholinesterases with tight binding inhibitors. *Chem-Biol Interact* **2005**; 157, 133–141.
4) Krasinski A, Radic Z, Manetsch R, Raushel J, Taylor P, Sharpless K B, Kolb H C*. Click Chemistry Screening *In Situ*: Target-Guided Optimization of Acetylcholinesterase Inhibitors. *J Am Chem Soc* **2005**; 127, 6686–6692.
3) Zheng L, Manetsch R, Woggon W-D, Baumann U, Reymond J L*. Mechanistic Study of Proton Transfer in Catalytic Antibody 16E7 by Site-Directed Mutagenesis and Homology Modeling. *Bioorg Med Chem* **2005**; 13, 1021–1029.
2) Manetsch R, Krasinski A, Radic Z, Raushel J, Taylor P, Sharpless K B, Kolb H C*. In Situ Click Chemistry: Enzyme Inhibitors Made to Their Own Specifications. *J Am Chem Soc* **2004**; 126, 12809–12818.
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Book Chapters

1) Book chapter on "A Comprehensive Review of 4(1*H*)-Quinolones and 4(1*H*)-Pyridines for the Development of an Effective Antimalarial" in Plasmodium Species and Drug Resistance by Ami H. Asakawa and Roman Manetsch, IntechOpen, **2021**.
2) Book chapter on "3',5'-Dimethoxybenzoin" in *e-EROS Encycl. Reagents Org. Synth.* by R. Matthew Cross and Roman Manetsch, Wiley, **2009**.

Patents

17) Manetsch R, Ferreira G C, Stojanovski B M, Nacjeva K P. 5-aminolevulinate synthase inhibitors and methods of use thereof. US11,479,532, **2022**.
16) Manetsch R, Nacheva K P, Flanigan D L, Namelikonda N K, Iyamu I D, Kulkarni S S, Barber M M, Tipton J D, Wang HG, Doi K. Target binding molecules identified by kinetic target-guided synthesis. US10,551,389B2, **2020**.
15) Manetsch R, Van Horn K S, Burda W N, Shaw L N, Fleeman R, Barber M, Flanigan D L. N^2,N^4-Disubstituted quinazoline-2,4-diamines and uses thereof. US10,323,007B1, **2019**.
14) Manetsch R, Shaw L N, Van Horn K S, Burda W N. Compositions, methods of use, and methods of treatment. US10,081,607B2, **2018**.
13) Manetsch R, Kumar A B, Tipton J. Photoactivatable probes and uses thereof. US10,067,136B1, **2018**.

12) Manetsch R, Kyle D E, Raghupathi N, Maignan J R, Lichorowic C L, LaCrue A N. Quinolone-based compounds, formulations, and uses thereof. US10,000,452B1, **2018**.
11) Riscoe M K, Kelly J X, Winter R W, Hinrichs D J, Smilkstein M J, Nilsen A, Burrows J N, Kyle D E, Manetsch R, Cross R M, Monastyrskyi A, Flanigan D L. Compounds Having Antiparasitic or Anti-Infectious Activity. US9206131B2, **2015**.
10) Manetsch R, Shaw L N, Van Horn K S, Burda W N. Compositions, methods of use, and methods of treatment. US8,906,918B1, **2014**.
9) Manetsch R, Cross R M, Namelikonda N K, Kyle D E, Mutka T S, Lacrue A N, Maignan J R, Saenz F E. Preparation of 4(1*H*)-Quinolones Having Antimalarial Activity with Reduced Chemical Resistance. US8,877,752B2, **2014**.
8) Riscoe M K, Kelly J X, Winter R W, Hinrichs D J, Smilkstein M J, Nilsen A, Burrows J N, Kyle D E, Manetsch R, Cross R M, Monastyrskyi A, Flanigan D L. Compounds Having Antiparasitic or Anti-Infectious Activity. US20140045,888A1, **2014**.
7) Riscoe M K, Kelly J X, Winter R W, Hinrichs D J, Smilkstein M J, Nilsen A, Burrows J N, Kyle D E, Manetsch R, Cross R M, Monastyrskyi A, Flanigan D L. Compounds Having Antiparasitic or Anti-Infectious Activity. US8,598,354B2, **2013**.
6) Wang HG, Manetsch R, HuX, Kulkarni S S, Sun J. Acylsulfonamides and processes for producing the same. US8,524,947B2, **2013**.
5) Riscoe M K, Kelly J X, Winter R W, Hinrichs D J, Smilkstein M J, Nilsen A, Burrows J N, Kyle D E, Manetsch R, Cross R M, Monastyrskyi A, Flanigan D L. Compounds Having Antiparasitic or Anti-Infectious Activity. US20,120,115,904A1, **2012**.
4) Manetsch R, Kulkarni S S, Iyamu I D, Wang H-G, Doi K, Guida W C, Santiago D N, Duboulay C J. Target-Guided Synthesis of Acylsulfonamides that Target Bcl-2 Family Proteins with Potential Use in Treating Cancer. WO2012021486A2, **2012**.
3) Adams J H, Balu B, Maher S P, Campbell C, Manetsch R. Methods for Treating and/or Preventing Malaria in Individuals that Use *Plasmodium* PF13_0027 Gene and Dual-Specificity Protein Tyrosine Phosphatase as Targets. WO2010108177A2, **2010**.
2) Manetsch R, Wang H-G, Hu X, Kulkami S S, Sun J G. Target-Guided Synthesis of Triazoles in the Presence of a Bcl-2 Family Protein. WO2009105746A2, **2009**.
1) Manetsch R, Wang H-G, Hu X, Kulkami S S; Sun J G. Process for Preparation of Acylsulfonamides from Thioacids and Sulfonyl Azides in the Presence of a Bcl-2 Family Protein. WO2009105751A1, **2009**.

Invited Talks and Conferences

41) The Antimicrobial Activity of Streptothricins and the Convergent Synthesis of Streptothricin F. Boston Area Antimicrobial Resistance Network Meeting. December 2, **2022**.
40) Transforming Bricklike 4(1*H*)-Quinolones into Orally Bioavailable Antimalarials Targeting Liver, Blood, and Transmitting Stages of the Parasite. Global Conference on Pharmacy and Pharmaceutical Sciences. Virtual, November 15, **2021**.
39) Unconventional Selection and Optimization Approaches to Find the Right One. Department Of Chemistry, Georgia State University. Atlanta, GA, United States September 24, **2021**.
38) Transforming Bricklike 4(1*H*)-Quinolones into Orally Bioavailable Antimalarials Targeting Liver, Blood, and Transmitting Stages of the Parasite. Pharmaceutical Research and Drug Development. Virtual, September 20 - 22, **2021**.
37) A Divergent Total Synthesis of Streptothricin F. 3rd International Conference on PharmaScience Research and Development. Virtual, February 22 - 24, **2021**.

36) Mass Spectrometry-Guided Synthesis for the Discovery and Development of Anti-Malarial Agents. Institut for Kemi, Danmarks Tekniske Universitet. Lyngby, Denmark, October 30, **2019**.
35) Kinetic target-guided synthesis to discover new Leads for *N. fowleri*. Amoeba Science Meeting. Orlando, FL, United States, September 14, **2019**.
34) Mass Spectrometry-Guided Discovery and Development of Anti-Malarial Agents. Departamento de Química en Ciencias Farmacéuticas, Universidad Complutense de Madrid. Madrid, Spain, July 9, **2019**.
33) Kinetic Target-guided Synthesis: Mass Spectrometry-driven Medicinal Chemistry Targeting Protein-Protein Interactions. 2018 Southeastern Chemical Biology Symposium. Athens, GA, United States, April 21, **2018**.
32) Orally Bioavailable Antimalarial 4(1*H*)-Quinolone and 4(1*H*)-Quinolone Prodrugs with Single-Dose Cures. International Pharma Conference and Expo. Rome, Italy, May 2-4, **2018**.
31) Kinetic Target-guided Synthesis: a MS-based Fragment Evolution Platform. International Pharma Conference and Expo. Rome, Italy, May 2 - 4, **2018**.
30) Mass Spectrometry-guided Medicinal Chemistry Targeting Malaria and Cancer. Chemistry Department, University of Massachusetts Boston. Boston, MA, United States, September 27, **2017**.
29) Mass Spectrometry-Driven Medicinal Chemistry Targeting Malaria and Cancer. Chemistry and Biochemistry Department, University of Massachusetts Dartmouth. Dartmouth, MA, United States, February 11, **2016**.
28) Kinetic Target-Guided Synthesis: A Fragment Evolution Strategy Based on Bioorthogonal Reactions. Fragment-based Lead Discovery Conference 2014. Basel, Switzerland, September 21-24, **2014**.
27) Mass Spectrometry-Guided Approaches for Synthetic and Medicinal Chemistry. Pharmaceutical Sciences, University of Nebraska Medical Centery. Omaha, NE, United States, March 12, **2014**.
26) Mass Spectrometry-Guided Approaches for Synthetic and Medicinal Chemistry. Department of Chemistry, Wayne State University. Detroit, MI, United States, March 5, **2014**.
25) Mass Spectrometry-Guided Approaches for Synthetic and Medicinal Chemistry. Department of Chemistry and Applied Biosciences, Swiss Federal Institute of Technology (ETH). Zürich, Switzerland, October 4, **2013**.
24) Kinetic Target-guided Synthesis: A Mass Spectrometry-based Fragment Evolution Strategy for "Undruggable" Targets. 30th Winterschool on Proteinases and Their Inhibitors. Tiers am Rosengarten, Italy, February 27 - March 3, **2013**.
23) Kinetic Target-Guided Synthesis: A Fragment-Based Discovery Strategy for "Undruggable" Targets Based on Bioorthogonal Reactions. Department of Chemistry, University of Basel. Basel, Switzerland, February 7, **2013**.
22) Mass Spectrometry Guided Medicinal Chemistry of Antimalarial and Anticancer Agents. Department of Chemistry and Biochemistry, University of Bern. Bern, Switzerland, November 27, **2012**.
21) Bringing 4(1*H*)-Quinolones and 3-Aryldiazirines Out of the "Dark" Ages. 6th International Conference, Chemistry of Nitrogen Containing Heterocycles. Kharkiv, Ukraine, November 12-16, **2012**.

20) Kinetic Target-Guided Synthesis: A Fragment-Based Discovery Strategy for "Undruggable" Targets Based on Bioorthogonal Reactions. Drug Discovery Symposium, Novartis. Basel, Switzerland and Cambridge, MA, United States, October 22, **2012**.
19) Kinetic Target-Guided Synthesis: Fragment-Based Discovery Strategies Based on Bioorthogonal Reactions. Glaxo Smith Kline. Research Triangle Park, NC, United States, June 26, **2012**.
18) Kinetic Target-Guided Synthesis: Fragment-Based Discovery Strategies Based on Bioorthogonal Reactions. Novartis. Basel, Switzerland, April 27, **2012**.
17) Kinetic Target-Guided Synthesis: Fragment-Based Discovery Strategies Based on Bioorthogonal Reactions. Addex Pharmaceuticals. Geneva, Switzerland, April 23, **2012**.
16) Mass Spectrometry Based Decisions Facilitating Synthetic and Medicinal Chemistry. Department of Chemistry, Clemson University. Clemson, SC, United States, March 15, **2012**.
15) Mass Spectrometry Based Decisions Facilitating Synthetic and Medicinal Chemistry. Department of Chemistry, Mississippi State University. Mississippi State, MS, United States, March 2, **2012**.
14) Quinazolines with Anti-Leishmania Activity. Consortium for Parasitic Drug Development Meeting 2011. Clearwater, FL, United States, November 1 - 3, **2011**.
13) LC-MS-Guided Identification and Optimization of Anti-Cancer and Anti-Malarial Agents. Albert Einstein College of Medicine. Bronx, NY, United States, June 21, **2011**.
12) The Bioorthogonal Sulfo-click Reaction and its Use in Kinetic Target-Guided Synthesis Screening of Bcl-2 Proteins. Amgen. Thousand Oaks, CA, United States, May 18, **2011**.
11) LC-MS-Guided Identification and Optimization of Anti-Cancer and Anti-Malarial Agents. Department of Chemistry, Rice University. Houston, TX, United States, April 27, **2011**.
10) Bioorthogonality of the Sulfo-Click Reaction and its Use in Kinetic Target-Guided Synthesis. 241st ACS National Meeting and Exposition. Anaheim, CA, United States, March 27 to 31, **2011**.
9) Discovery and Optimization of Protein-Protein Interaction Modulators via Kinetic Target-Guided Synthesis. 18th International Molecular Medicine Tri-Conference, Mastering Medicinal Chemistry Summit. San Francisco, CA, United States, February 23 - 25, **2011**.
8) Targeting Protein-Protein Interactions via Kinetic Target-Guided Synthesis. The Fragment-Based Lead Discovery Conference 2010. Philadelphia, PA, United States, October 10 - 13, **2010**.
7) Two Case Studies of LC/MS-driven Drug Discovery: Targeting Bcl-2-Protein Interactions for Anti-Cancer and bc_1 for Anti-Malarial Agents. Department of Chemistry, University of Washington. Seattle, WA, United States, October 20, **2010**.
6) Targeting Protein-Protein Interactions and Malaria: Two Case Studies of LC/MS-driven Screening and Hit-to-Lead Optimization. The Scripps Florida Research Institute. Jupiter, FL, United States, August 10, **2010**.
5) Kinetic Target-Guided Synthesis Targeting Protein-Protein Interactions. “Short talk” and poster at the Gordon Research Conference on Chemistry and Biology of Peptides. Ventura, CA, United States,February 28 - March 5, **2010**.
4) LC/MS-based Drug Discovery Targeting Malaria and Cancer. Department of Chemistry, University of Tampa. Tampa, FL, United States, November 17, **2009**.
3) Kinetic Target-Guided Synthesis: A Fragment-Based Lead Discovery Method Targeting Protein-Protein Interactions. Department of Chemistry, Florida State University. Tallahassee, FL, United States, November 20, **2008**.

2) Target-Guided Synthesis: A New Approach for Drug Discovery. Florida Annual Meeting and Exposition 2008 (American Chemical Society Regional Meeting). Orlando, FL, United States, May 8 - 10, **2008**.

1) Target-Guided Synthesis: A New Approach for Drug Discovery. BioStat International / Molecular Medicine Seminar Series, College of Medicine, University of South Florida. Tampa, FL, United States, March 31, **2006**.

Selected Oral and Poster Presentations by Graduate Students and Postdocs

(Oral presentations indicated by underlined author; first author is presenting author)

123) Yuliya Marusyk, Brandon Miller, Matthew Dowgiallo, Mintesinot Kassu, Kenneth Smith, Christopher Morgan, Hanna Warinner, Andrew Fetigan, Edward Yu, James Kirby, Roman Manetsch. Antimicrobial and Structural Characterization of Streptothricin F, and the Convergent Synthesis of Streptothricin Analogs. Boston Area Antimicrobial Resistance Network Meeting 2022. Boston, MA, United States, December 2.

122) Alicia Wagner, Roger Trombley, Maris Podgurski, Jacqueline Smith, Meng Cui, Adriana A. Marin, Steven P. Maher, Dennis E. Kyle, Roman Manetsch. Identification of *Plasmodium falciparum* Formate Nitrite Transporter (*Pf*FNT) Inhibitors via Virtual Screen. ACS Northeast Regional Meeting 2022. Rochester NY, United States, October 2 – 5, 2022.

121) Anna Meglan, Alicia Wagner, Yisakor Assefa, Sagan Thomas De Castro, Olivia Isabelle Mcwhorter, Adriana A. Marin, Kimberly Stieglitz, Steven P. Maher, Dennis E. Kyle, Roman Manetsch. Identification of *Plasmodium falciparum* Autophagy-related Protein 8 (*Pf*Atg8) Inhibitors via Two Screening Methods. ACS Northeast Regional Meeting 2022. Rochester NY, United States, October 2 – 5, 2022.

120) Ling Cheng, Lili Huang, Wei Wang, Rick L. Tarleton, Roman Manetsch. Design and Development of *Trypanosoma cruzi* Benzoxaborole Prodrug. ACS Northeast Regional Meeting 2022. Rochester NY, United States, October 2 – 5, 2022.

119) Lili Huang, Alona Botnar, Chungsik Kim, Dennis E. Kyle, Roman Manetsch. Clickable Gibberellic Acid Derivatives and Early Recrudescence Phenotype from Artemisinin-Induced Dormancy. ACS Northeast Regional Meeting 2022. Rochester NY, United States, October 2 – 5, 2022.

118) Brandon Miller, Matthew Dowgiallo, Mintesinot Kassu, Kenneth Smith, Christopher Morgan, Yuliya Marusyk, Hanna Warinner, Andrew Fetigan, Edward Yu, James Kirby, Roman Manetsch. Antimicrobial and Structural Characterization of Streptothricin F, and the Convergent Synthesis of Streptothricin Analogs. New England Glyco-Chemistry Meeting. Waltham, MA, United States, October 2 – 5, 2022.

117) Ami Asakawa, Anthony Marasciullo, Caroline Consoli, Bruno Quiroga, Sagan Thomas De Castro, Olivia Isabelle Mcwhorter, Adrianna A. Marin, Meng Cui, Steven Maher, Dennis E. Kyle, Roman Manetsch. Design and Development of Antimalarial 1,2,3,4-Tetrahyroacrin-9(10*H*)-ones (THAs) and the Development of Quantitative Structure-Activity Relationship (QSAR) Models. Northeast Regional Meeting. Rochester, NY, United States. Oct 02 - 05, 2022.

116) Ami Asakawa, Anthony Marasciullo, Caroline Consoli, Bruno Quiroga, Sagan Thomas De Castro, Olivia Isabelle Mcwhorter, Adrianna A. Marin, Meng Cui, Steven Maher, Dennis E. Kyle, Roman Manetsch. Design and Development of Antimalarial 1,2,3,4-Tetrahyroacrin-9(10*H*)-ones (THAs) and the Development of Quantitative Structure-Activity Relationship

(QSAR) Models. Empowering Women in Organic Chemistry. Cambridge, MA, United States. June 23 – 24, 2022.

115) Lili Huang, Alona Botnar, Chungsik Kim, Dennis E. Kyle, Roman Manetsch. Clickable Gibberellic Acid Derivatives and Early Recrudescence Phenotype from Artemisinin-Induced Dormancy. Empowering Women in Organic Chemistry. Hybrid conference. Cambridge, MA, United States, June 23 – 24, 2022

114) Ling Cheng, Lili Huang, Wei Wang, Rick L. Tarleton, Roman Manetsch. Design and Development of *Trypanosoma cruzi* Benzoxaborole Prodrug. Empowering Women in Organic Chemistry. Hybrid conference. Cambridge, MA, United States, June 23 – 24, 2022.

113) Alicia Wagner, Roger Trombley, Maris Podgurski, Meng Cui, Adriana A. Marin, Steven P. Maher, Dennis E. Kyle, Roman Manetsch. Identification of *Plasmodium falciparum* Formate Nitrite Transporter (*Pf*FNT) Inhibitors via Virtual Screen. Empowering Women in Organic Chemistry. Hybrid conference. Cambridge, MA, United States, June 23 – 24, 2022.

112) Brandon Miller, Matthew Dowgiallo, Mintesinot Kassu, Kenneth Smith, Christopher Morgan, Yuliya Marusyk, Hanna Warinner, Andrew Fetigan, Edward Yu, James Kirby, Roman Manetsch. Antimicrobial and Structural Characterization of Streptothricin F, and the Convergent Synthesis of Streptothricin Analogs. New England Glyco-Chemistry Meeting. Waltham, MA, United States, June 11, 2022.

111) Brandon Miller, Matthew Dowgiallo, Mintesinot Kassu, Kenneth Smith, Christopher Morgan, Andrew Fetigan, Hanna Warinner, Jason Guo, Edward Yu, James Kirby, Roman Manetsch. Studies Towards the Convergent Total Synthesis of Streptothricin Analogs. Northeast Student Chemistry Research Conference. Virtual conference. Boston, MA, United States, April 23, 2022.

110) Alicia Wagner, Roger Trombley, Maris Podgurski, Meng Cui, Adriana A. Marin, Steven P. Maher, Dennis E. Kyle, Roman Manetsch. Identification of *Plasmodium falciparum* Formate Nitrite Transporter (*Pf*FNT) Inhibitors via Virtual Screen. Northeast Student Chemistry Research Conference. Virtual conference. Boston, MA, United States, April 23, 2022.

109) Lili Huang, Alona Botnar, Chungsik Kim, Dennis E. Kyle, Roman Manetsch. Clickable Gibberellic Acid Derivatives and Early Recrudescence Phenotype from Artemisinin-Induced Dormancy. Northeast Student Chemistry Research Conference. Virtual conference. Boston, MA, United States, April 23, 2022.

108) Alicia Wagner, Mintesinot Kassu, Tsedey Ayele, Anna Meglan, Yisakor Assefa, Adriana A. Marin, Meng Cui, Kimberly Stieglitz, Steven P. Maher, Dennis E. Kyle, Roman Manetsch. Identification of *Plasmodium falciparum* Autophagy-related Protein 8 (Atg8) Inhibitors via Two *In Silico* Screening Methods. Malaria: Confronting Challenges From Drug Discovery to Treatment. Breckenridge, CO, United States. April 10 – 13, 2022.

107) Mintesinot Kassu, Prakash Parvatkar, Jillian Milanes, Chungsik Kim, Matthew Dowgiallo, Yingzhao Zhao, Lili Huang, Ami Asakawa, Alicia Wagner, Brandon Miller, Karissa Carter, James Morris, Roman Manetsch. Discovery of *Plasmodium vivax* Hexokinase Inhibitors using High Throughput Kinetic Target-Guided Synthesis Approach. Malaria: Confronting Challenges From Drug Discovery to Treatment. Breckenridge, CO, United States. April 10 – 13, 2022.

106) Lili Huang, Alona Botnar, Chungsik Kim, Dennis E. Kyle, Roman Manetsch. Clickable Gibberellic Acid Derivatives and Early Recrudescence Phenotype from Artemisinin-Induced Dormancy. Malaria: Confronting Challenges From Drug Discovery to Treatment. Breckenridge, CO, United States, April 10 –13, 2022.

105) Ami Asakawa, Anthony Marasciullo, Caroline Consoli, Bruno Quiroga, Sagan Thomas De Castro, Olivia Isabelle Mcwhorter, Adrianna A. Marin, Meng Cui, Steven Maher, Dennis E. Kyle, Roman Manetsch. Design and Development of Antimalarial 1,2,3,4-Tetrahyroacrin-9(10*H*)-ones (THAs) and the Development of Quantitative Structure-Activity Relationship (QSAR) Models. Malaria: Confronting Challenges From Drug Discovery to Treatment. Breckenridge, CO, United States. April 10 – 13, 2022.

104) Brandon Miller, Matthew Dowgiallo, Mintesinot Kassu, Kenneth Smith, Christopher Morgan, Andrew Fetigan, Hanna Warinner, Jason Guo, Edward Yu, James Kirby, Roman Manetsch. Studies Towards the Convergent Total Synthesis of Streptothricin Analogs. Frühjahrssymposium (Spring Symposium) 2022 of the JungChemikerForum (JCF) of the German Chemical Society (GDCh). Leibniz Universität Hannover. Hannover, Germany, March 23, 2022.

103) Mintesinot Kassu, Prakash Parvatkar, Jillian Milanes, Christopher Rice, Chungsik Kim, Matthew Dowgiallo, Yingzhao Zhao, Lili Huang, Ami Asakawa, Alicia Wagner, Brandon Miller, Karissa Carter, Bart Staker, Isabelle Phan, Peter Myler, Wesley Van Voorhis, James Morris, Dennis Kyle, Roman Manetsch. Shotgun Kinetic Target-Guided Synthesis Approach Enables the Discovery of Small Molecule Inhibitors against Pathogenic Amoeba Glucokinases. Boston Symposium on Organic and Bioorganic Chemistry. Virtual conference. Boston, MA, United States, November 4, 2021.

102) Brandon Miller, Matthew Dowgiallo, Mintesinot Kassu, Kenneth Smith, Christopher Morgan, Andrew Fetigan, Jason Guo, Edward Yu, James Kirby, Roman Manetsch. Studies Towards the Convergent Total Synthesis of Streptothricin Analogs. Boston Symposium on Organic and Bioorganic Chemistry. Virtual conference. Boston, MA, United States, November 4, 2021.

101) Alicia Wagner, Maris Podgurski, Meng Cui, Adriana A. Marin, Steven P. Maher, Dennis E. Kyle, Roman Manetsch. Identification of *Plasmodium falciparum* Formate Nitrite Transporter (*Pf*FNT) Inhibitors via Virtual Screen. Boston Symposium on Organic and Bioorganic Chemistry. Virtual conference. Boston, MA, United States, November 4, 2021.

100) Mintesinot Kassu, Prakash Parvatkar, Jillian Milanes, Christopher Rice, Chungsik Kim, Matthew Dowgiallo, Yingzhao Zhao, Lili Huang, Ami Asakawa, Alicia Wagner, Brandon Miller, Karissa Carter, Bart Staker, Isabelle Phan, Peter Myler, Wesley Van Voorhis, James Morris, Dennis Kyle, Roman Manetsch. Shotgun Kinetic Target-Guided Synthesis Approach Enables the Discovery of Small Molecule Inhibitors against Pathogenic Amoeba Glucokinases. 262nd American Chemical Society National Meeting and Exposition. Hybrid conference. August 22 – 26, 2021.

99) Ami Asakawa, Anthony Marasciullo, Sagan Thomas De Castro, Isabelle Mcwhorter, Meng Cui, Steven Maher, Dennis E. Kyle, Roman Manetsch. Development of quantitative activity relationship (QSAR) models to assist in the design and development of antimalarial 1,2,3,4-tetrahydroacrin-9(10*H*)-ones (THAs). 262nd American Chemical Society National Meeting and Exposition. Hybrid conference. August 22 – 26, 2021.

98) Brandon Miller, Matthew Dowgiallo, Mintesinot Kassu, Kenneth Smith, Christopher Morgan, Andrew Fetigan, Jason Guo, Edward Yu, James Kirby, Roman Manetsch. Studies Towards the Convergent Total Synthesis of Streptothricin Analogs. New England Glyco-Chemistry Meeting. Virtual conference. Boston, MA, United States, May 2021.

97) Hanna Warinner, Brandon Miller, Matthew Dowgiallo, Mintesinot Kassu, Andrew D. Fetigan, Roman Manetsch. New England Glyco-Chemistry Meeting. Virtual conference. Synthesis of the Gulosamine Moiety of Streptothricin F. Boston, MA, United States, May 2021.

96) Ami Asakawa, Meng Cui, Roman Manetsch. Retro-Analysis of Antimalarial Quinolones through AutoQSAR, 3D QSAR, and Docking Studies. Boston Symposium on Organic and Bioorganic Chemistry. Virtual conference. Boston, MA, United States, October 2020.

95) Alicia Wagner, Mintesinot Kassu, Pravash Parvatkar, Jillian Milanes, Chungsik Kim, Matthew Dowgiallo, Yingzhao Zhao, Lili Huang, Ami Asakawa, Brandon Miller, Karissa Carter, James Morris, Roman Manetsch. Shotgun Kinetic Target-Guided Synthesis Approach Enables the Discovery of Small Molecule Inhibitors against Patheogenic Amoeba Glucokinases. Bristol Myers Squibb, Women in Chemistry Outreach Event. Virtual conference. Boston, MA, United States, November 2020.

94) Lili Huang, David Yingzhao Zhao, Roman Manetsch: Studies towards the Total Synthesis of Anguidine and Anguidine Analogues. Bristol Myers Squibb, Women in Chemistry Outreach Event. Virtual conference. Boston, MA, United States, November 2020.

93) Ami Asakawa, Meng Cui, Roman Manetsch. Retro-Analysis of Antimalarial Quinolones through AutoQSAR, 3D QSAR, and Docking Studies. Bristol Myers Squibb, Women in Chemistry Outreach Event. Virtual conference. Boston, MA, United States, November 2020.

92) Mintesinot Kassu, Prakash Parvatkar, Jillian Milanes, Chungsik Kim, Matthew Dowgiallo, Yingzhao Zhao, Lili Huang, Ami Asakawa, Alicia Wagner, Brandon Miller, Karissa Carter, James Morris, and Roman Manetsch. Shotgun Kinetic Target-Guided Synthesis Approach Enables the Discovery of Small Molecule Inhibitors against Pathogenic Amoeba Glucokinases. Boston Symposium on Organic and Bioorganic Chemistry. Virtual conference. Boston, MA, United States, October 2020.

91) Mintesinot Kassu, Prakash Parvatkar, Jillian Milanes, Chungsik Kim, Matthew Dowgiallo, Yingzhao Zhao, Lili Huang, Ami Asakawa, Alicia Wagner, Brandon Miller, Karissa Carter, James Morris, and Roman Manetsch. Discovery of Anti-infectious Disease Agents using Kinetic Target-Guided Synthesis. 2020 PREP and IMSD forum. Virtual conference. Virginia Polytechnic Institute, Blacksburg, VA, United States, July 2020.

90) Matthew Dowgiallo, Mintesinot Kassu, James Kirby, Roman Manetsch: A Divergent Total Synthesis of Streptothricin F. Boston Symposium on Organic and Bioorganic Chemistry Boston, MA, United States, October 2019.

89) Brandon C. Miller, Matthew G. Dowgiallo, Daniel P. Donnelly, Joseph P. Salisbury, Krishna C. Aluri, Md Amin Hossain, Suhasini Iyengar, Meenal Chaudhari, Merlit Mathew, Isabella Miele, Jared R. Auclair, Steven A. Lopez, Jeffrey N. Agar, and Roman Manetsch. Cyclic Thiosulfinates as Selective Cross-Linkers for Thiol Pairs. Boston Symposium on Organic and Bioorganic Chemistry. Boston, MA, United States, October 2019.

88) Mintesinot Kassu, Prakash Parvatkar, Chungsik Kim, Yingzhao Zhao, Matthew Dowgiallo, Ami Asakawa, Brandon Miller, Lili Huang, Roman Manetsch: Identification of Small Molecule Inhibitors using Kinetic Target-Guided Synthesis: A Protein Template-Mediated Lead Discovery Approach. Boston Symposium on Organic and Bioorganic Chemistry. Boston, MA, United States, October 2019.

87) Chungsik Kim, Matthew G. Dowgiallo, Kenneth P. Smith, Lucius Chiaraviglio, Prakash Parvatkar, James E. Kirby, Roman Manetsch: Adjunctive Antimicrobials Active Against Carbapenem-Resistant *Enterobacteriaceae*: SAR of KP-40. Boston Symposium on Organic and Bioorganic Chemistry. Boston, MA, United States, October 2019.

86) Matthew Dowgiallo, Mintesinot Kassu, James Kirby, Roman Manetsch: Total Synthesis of Streptothricin F and Streptolidine Lactam. 3rd Annual ACS-CVS Symposium on Applied Synthesis. New London, CT, United States, September 2019.
85) Ami Asakawa, Chungsik Kim, Dennis E. Kyle, Roman Manetsch: Development of 1,2,3,4-Tetrahydroacridin-9(10*H*)-ones and 4(1*H*)-Quinolone Prodrugs as Antimalarial Agents. 3rd Annual ACS-CVS Symposium on Applied Synthesis. New London, CT, United States, September 2019.
84) David Yingzhao Zhao, Lili Huang, Roman Manetsch: Studies towards the total synthesis of anguidine. 3rd Annual ACS-CVS Symposium on Applied Synthesis. New London, CT, United States, September 2019.
83) Brandon C. Miller, Matthew G. Dowgiallo, Daniel P. Donnelly, Joseph P. Salisbury, Krishna C. Aluri, Md Amin Hossain, Suhasini Iyengar, Meenal Chaudhari, Merlit Mathew, Isabella Miele, Jared R. Auclair, Steven A. Lopez, Jeffrey N. Agar, and Roman Manetsch. Cyclic Thiosulfinates as Selective Cross-Linkers for Thiol Pairs. 3rd Annual ACS-CVS Symposium on Applied Synthesis. New London, CT, United States, September 2019.
82) Mintesinot Kassu, Prakash Parvatkar, Chungsik Kim, Yingzhao Zhao, Matthew Dowgiallo, Ami Asakawa, Brandon Miller, Lili Huang, Roman Manetsch: Identification of Small Molecule Inhibitors using Kinetic Target-Guided Synthesis: A Protein Template-Mediated Lead Discovery Approach. 3rd Annual ACS-CVS Symposium on Applied Synthesis. New London, CT, United States, September 2019.
81) Chungsik Kim, Matthew G. Dowgiallo, Kenneth P. Smith, Lucius Chiaraviglio, Prakash Parvatkar, James E. Kirby, Roman Manetsch: Adjunctive Antimicrobials Active Against Carbapenem-Resistant *Enterobacteriaceae*: SAR of KP-40. 3rd Annual ACS-CVS Symposium, New London, CT, United States, September 2019.
80) Ami Asakawa, Chungsik Kim, Dennis E. Kyle, Roman Manetsch: Development of 1,2,3,4-Tetrahydroacridin-9(10*H*)-ones and 4(1*H*)-Quinolone Prodrugs as Antimalarial Agents. Northeastern University Department of Pharmaceutical Sciences Research Showcase 2019. Boston, MA, United States, September 2019.
79) Matthew Dowgiallo, Mintesinot Kassu, James Kirby, Roman Manetsch. Total Synthesis of Streptothricin F and Streptolidine Lactam. Northeastern University Department of Pharmaceutical Sciences Research Showcase 2019. Boston, MA, United States, September 2019.
78) David Yingzhao Zhao, Lili Huang, Roman Manetsch: Studies towards the total synthesis of anguidine. Northeastern University Department of Pharmaceutical Sciences Research Showcase 2019. Boston, MA, United States, September 2019.
77) Brandon C. Miller, Matthew G. Dowgiallo, Daniel P. Donnelly, Joseph P. Salisbury, Krishna C. Aluri, Md Amin Hossain, Suhasini Iyengar, Meenal Chaudhari, Merlit Mathew, Isabella Miele, Jared R. Auclair, Steven A. Lopez, Jeffrey N. Agar, and Roman Manetsch. Cyclic Thiosulfinates as Selective Cross-Linkers for Thiol Pairs. Northeastern University Department of Pharmaceutical Sciences Research Showcase 2019. Boston, MA, United States, September 2019.
76) Mintesinot Kassu, Prakash Parvatkar, Chungsik Kim, Yingzhao Zhao, Matthew Dowgiallo, Ami Asakawa, Brandon Miller, Lili Huang, Roman Manetsch: Identification of Small Molecule Inhibitors using Kinetic Target-Guided Synthesis: A Protein Template-Mediated Lead Discovery Approach. Northeastern University Department of Pharmaceutical Sciences Research Showcase 2019. Boston, MA, United States, September 2019.

75) Chungsik Kim, Matthew G. Dowgiallo, Kenneth P. Smith, Lucius Chiaraviglio, Prakash Parvatkar, James E. Kirby, Roman Manetsch: Adjunctive Antimicrobials Active Against Carbapenem-Resistant *Enterobacteriaceae*: SAR of KP-40**.** Northeastern University Department of Pharmaceutical Sciences Research Showcase 2019. Boston, MA, United States, September 2019.
74) Matthew Dowgiallo, Mintesinot Kassu, James Kirby, Roman Manetsch. Total Synthesis of Streptothricin F and Streptolidine Lactam. 258th ACS National Meeting and Exposition. San Diego, CA, United States, August 25 to 29, 2019. ORGN 730.
73) David Yingzhao Zhao, Roman Manetsch: Studies towards the total synthesis of anguidine. 258th ACS National Meeting and Exposition. San Diego CA, United States, August 25 to 29, 2019. ORGN-675.
72) Mintesinot Kassu, Prakash Parvatkar, Roman Manetsch: Identification of Small Molecule Inhibitors using Kinetic Target-Guided Synthesis: A Protein Template-Mediated Lead Discovery Approach. Boston, MA, United States, October 2018.
71) Matthew Dowgiallo, James E. Kirby, Roman Manetsch: Studies toward the total synthesis of streptolidine lactam and streptothricin F. Boston Symposium on Organic and Bioorganic Chemistry. Boston, MA, United States, October 2018.
70) David Yingzhao Zhao, Roman Manetsch: Studies towards the total synthesis of anguidine. Boston Symposium on Organic and Bioorganic Chemistry. Boston, MA, United States, October 2018.
69) Jackson G. Cacioppo, Brenda Winn, Chungsik Kim, Imran Elmaarouf, Meng Cui, Diomedes Logothetis, Roman Manetsch: Pyridyl- and pyrimidinyl-substituted diazirines as aromatic amino acid mimics and photoaffinity labels. Boston Symposium on Organic and Bioorganic Chemistry. Boston, MA, United States, October 2018.
68) Mintesinot Kassu, Prakash Parvatkar, Roman Manetsch: Identification of potent protein-protein interaction modulators using kinetic target-guided synthesis. Boston Symposium on Organic and Bioorganic Chemistry. Boston, MA, United States, October 2018.
67) Jennifer Winters, David McDonald, Elizabeth Taft, Jeffrey Agar, Roman Manetsch, Mary Jo Ondrechen: Cyclic disulfide compounds stabilize SOD1 dimers. 256th ACS National Meeting and Exposition. Boston, MA, United States, August 19 to 23, 2018. COMP-381.
66) David Yingzhao Zhao, Roman Manetsch: Studies towards the total synthesis of anguidine. 256th ACS National Meeting and Exposition. Boston, MA, United States, August 19 to 23, 2018. ORGN-644.
65) Matthew Dowgiallo, James Kirby, Roman Manetsch: Synthesis of a thiourea analogue of streptolidine lactam. 256th ACS National Meeting and Exposition. Boston, MA, United States, August 19 to23, 2018. ORGN-643.
64) Matthew Dowgiallo, James Kirby, Roman Manetsch: Studies Towards the Total Synthesis of Streptothricin F: Synthesis of Thiourea Analogue of Streptolidine Lactam. Natural Products and Bioactive Compounds Gordon Research Seminar. Andover, NH, United States July 2018.
63) Jackson G. Cacioppo, Brenda Winn, Chungsik Kim, Imran Elmaarouf, Meng Cui, Diomedes Logothetis, Roman Manetsch: Pyridyl- and pyrimidinyl-substituted diazirines as aromatic amino acid mimics and photoaffinity labels. Northeastern University Department of Pharmaceutical Sciences Research Showcase 2018. Boston, MA, United States, June 2018.
62) Prakash T. Parvatkar, Eugene Smotkin, Roman Manetsch: BINOL-Phosphoric Acid Catalyzed Tandem Oxidative Cyclization: Synthesis, Antimalarial Activity Evaluation and SAR Studies

of (±)-Decursivine. Northeastern University Department of Pharmaceutical Sciences Research Showcase 2018. Boston, MA, United States, June 2018.

61) Cynthia Lichorowic, Jordany R. Maignan, Raghupathi Neelarapu, Andrii Monastyrski, James V. Giarrusso, Tina S. Mutka, Lynn Blake, Debora Casandra, Alexis LaCrue, Dennis E. Kyle, Roman Manetsch: Optimization of 4(1*H*)-quinolone antimalarials for oral bioavailability and *in vivo* efficacy. 253rd ACS National Meeting and Exposition. San Francisco, CA, United States, April 2 to 6, 2017. MEDI-452.

60) Y. Zhao, K. Van Horn, D. Kyle, R. Manetsch. N^2,N^4-disubstituted Quinazoline-2,4-diamines with Anti-leishmanial Activity. Boston Symposium on Organic and Bioorganic Chemistry. Boston, MA, United States, October 2016.

59) Arun Babu Kumar, Jordan Anderson, Anthony Melendez and Roman Manetsch: Synthesis and SAR analysis of 1,3-disubstituted isopropanols as novel scaffold for β-secretase inhibition. 243rd ACS National Meeting and Exposition. San Diego, CA, United States, March 25 to 29, 2012.

58) Arun Babu Kumar: New series of 3-trifluoromethyl-3-aryldiazirine photo probes exhibiting enhanced stability to ambient light conditions. 243rd ACS National Meeting and Exposition. San Diego, CA, United States, March 25 to 29, 2012.

Awarded with an American Chemical Society Division of Medicinal Chemistry Student Travel Grant to attend the 243rd ACS National Meeting and Exposition in San Diego, CA.

57) K. Van Horn, X. Zhu, T. Pandharkar, B. Vesely, M. Z. Wang, D. Kyle, K. Werbovetz, R. Manetsch: 2,4-diaminoquinazolines as anti-leishmanials. 243rd ACS National Meeting and Exposition. San Diego, CA, United States, March 25 to 29, 2012.

56) Kurt S.Van Horn, Whittney Burda, Lindsey Shaw, Roman Manetsch: 2,4-diaminoquinazolines as anti-bacterials. 243rd ACS National Meeting and Exposition. San Diego, CA, United States, March 25 to 29, 2012.

55) Shikha Mahajan, David Merkler, Roman Manetsch: Proteomic profiling of adenine nucleotides and nucleoside analogs binding proteins using activity-based protein profiling probes. 242nd ACS National Meeting and Exposition. Denver, CO, United States, August 28 to September 1, 2011.

54) R. Matthew Cross: Identification of an Early Lead and Optimization Strategies for the Development of an Orally Bioavailable Late Lead 4(1*H*)-Quinolone with Antimalarial Activity. Florida Annual Meeting and Exposition 2011 (ACS Regional Meeting). Palm Harbor, FL, United Sates, May 13 to 14, 2011.

53) Shikha Mahajan: Synthesis of biotinylated-azido-adenine ribose derivative analogues: Potential activity-based protein profiling probes. Florida Annual Meeting and Exposition 2011 (ACS Regional Meeting). Palm Harbor, FL, United States, May 12 to 14, 2011.

52) Katya Nacheva: 3,4-Bis(2,4-Difluorophenyl)-Maleimide as Fluorescence Probe and its Incorporation in a Fluorescent Resonance Energy Transfer Substrate of β-Secretase. Florida Annual Meeting and Exposition 2010 (ACS Regional Meeting). Palm Harbor, FL, United States, May 13 to 14, 2011.

51) Andrii Monastyrskyi: Synthesis and Evaluation of 4(1*H*)-quinolones Prodrugs Targeting Multi-drug Resistant *P. falciparum* Malaria. 2011 USF Raymond Castle Student Research Conference. Tampa, FL, United States April 9, 2011.

50) Katya Nacheva: Fluorescence and Resonance Energy Transfer of 3,4-bis(2,4-difluorophenyl)-maleimide. 2011 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 9, 2011.

49) Shikha Mahajan, David Merkler, Roman Manetsch: Protein Profiling of Adenine Nucleotides and Nucleoside Analogues Binding Proteins using Novel Activity Based Protein Profiling Probes. Sanibel Conference, American Society of Mass Spectrometry. St. Pete Beach, FL, United States, January 21 to 24, 2011.

48) Andrii Monastyrskyi, Roman Manetsch, Tina S Mutka, Alexis Lacrue, Fabian Saenz, Dennis E. Kyle: Synthesis and Evaluation of 4(1*H*)-quinolones Prodrugs Targeting Multi-drug Resistant *P. falciparum* Malaria. Florida Annual Meeting and Exposition 2011 (ACS Regional Meeting). Palm Harbor, FL, United States, May 12 to 14, 2011.

Awarded with the 1st prize in graduate poster competition.

47) R. Matthew Cross, Andrii Monastyrskyi, Jordany Maignan, Tina Mutka, Dennis E. Kyle, Roman Manetsch: Design of novel 4-(1*H*)-quinolones targeting multi-drug resistant *P. falciparum* malaria. Gordon Research Conference, Bryant University. Smithfield, RI, United States, July 18 to 23, 2010.

46) R. Matthew Cross: Synthesis and Structure-Activity Relationship Studies of 4(1*H*)-Quinolones Targeting Multi-drug Resistant *P. falciparum* Malaria. Florida Annual Meeting and Exposition 2010 (ACS Regional Meeting). Palm Harbor, FL, United States, May 13 to14, 2010.

45) Niranjan Namelikonda, Sameer Kulkarni, Kenichiro Doi, Hong-Gang Wang, Roman Manetsch: Kinetic Target-Guided Synthesis for the Identification of Bcl-xL-Protein Interaction Modulators. Florida Annual Meeting and Exposition 2010 (ACS Regional Meeting). Palm Harbor, FL, United States, May 13 to 14, 2010.

44) Katya Nacheva, William A. Maza, Randy W. Larsen, Roman Manetsch: 3,4-Bis(2,4-Difluorophenyl)-Maleimide as Fluorescence Probe and its Incorporation in a Fluorescent Resonance Energy Transfer Substrate of β-Secretase. Florida Annual Meeting and Exposition 2010 (ACS Regional Meeting). Palm Harbor, FL, United States, May 13 to 14, 2010.

43) Shikha Mahajan, David Merkler, Roman Manetsch: Synthesis of biotinylated-azido-adenine ribose derivative analogues: Potential activity-based protein profiling probes. Florida Annual Meeting and Exposition 2010 **(**ACS Regional Meeting). Palm Harbor, FL, United States, May 13 to 14, 2010.

42) Jordany R. Maignan, Andrii Monastyrskyi, Matthew R. Cross, Tina Mutka, Dennis E. Kyle, Roman Manetsch: The Use of an HPLC-based Assay to Determine Aqueous Solubility of Compounds with Biological Activity. Florida Annual Meeting and Exposition 2010 (ACS Regional Meeting). Palm Harbor, FL, United States, May 13 to 14, 2010.

41) Roman Manetsch: Kinetic Target-Guided Synthesis for the Identification of Bcl-xL-Protein Interaction Modulators. 2010 CHI's Fragment-Based Drug Discovery Conference. San Diego, CA, United States, April 27 to 29, 2010.

40) Andrii Monastyrskyi, David, Flanigan, R. Matthew Cross, Tina Mutka, Dennis Kyle, Roman Manetsch: Design of Novel 4(1*H*)-quinolones Targeting Multi-Drug Resistant *P. falciparum* Malaria. 2010 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 17, 2010.

39) Sameer Kulkarni: Kinetic Target-Guided Synthesis for the Identification of Bcl-X_L-Protein Interaction Modulators. 2010 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 17, 2010.

Awarded second place in the Bioorganic, Natural and Organic Chemistry Division.

38) Kurt Van Horn, Anuradha Srivastava, Dennis Kyle, Roman Manetsch: Anti-leishmanial Activity of a new series of Quinazolines. 2010 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 17, 2010.
37) Lisa Luong, R. Matthew Cross, Justin Sargent, Jordany Maignan, Tina Mutka, Dennis Kyle, Roman Manetsch: 1,2,3,4-Tetrahydroacridones as Potential Inhibitors of Atovaquone-Resistant and Atovaquone-Susceptible *P. falciparum* isolates TM90-C2B and W2. 2010 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 17, 2010.
36) Jordan Anderson, Arun Babu Kumar, Roman Manetsch: Design of a Small Molecule Inhibitor of β-Secretase. 2010 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 17, 2010.
35) Jordany Maignan, Andrii Monastyrskyi, Lisa Luong, R. Matthew Cross, Roman Manetsch: The Development and Use of an HPLC-based Assay to Determine Aqueous Solubility of Compounds with Biological Activity. 2010 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 17, 2010.
34) Anthony Melendez, Arun Babu Kumar, Jordan Anderson, Hong-Gang, Roman Manetsch: Synthesis of 1,3-Disubstituted Isopropanols as Potential Small Molecule Inhibitors for BACE-1 and Protein-Protein Interaction. 2010 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 17, 2010.
33) Sameer Kulkarni, Niranjan Namelikonda, Kenichiro Doi, Hong-Gang Wang, Roman Manetsch: Kinetic Target-Guided Synthesis for the Identification of Bcl-xL-Protein Interaction Modulators. 2010 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 17, 2010.
32) R. Matthew Cross, David L. Flanigan, Andrii Monastyrskyi, Tina Mutka, Dennis E. Kyle, Roman Manetsch: Design of novel 4-(1*H*)-quinolones targeting multi-drug resistant *P. falciparum* malaria. ACS National Meeting and Exposition. San Francisco, CA, United States, March 21 to 25, 2010.
31) R. Matthew Cross: Synthesis and structure-activity relationship studies of 4(1*H*)-quinolones targeting multi-drug resistant *P. falciparum* malaria. ACS National Meeting and Exposition. San Francisco, CA, United States, March 21 to 25, 2010.
30) Katya Nacheva, David Mayer, Roman Manetsch: In Situ Click Chemistry Reaction Templated by bCAII. 2009 USF Symposium on Drug Design, Discovery, and Delivery (Florida Center of Excellence for Biomolecular Identification and Targeted Therapeutics). Tampa, FL, United States, October 14 to 16, 2009.
29) Arun Babu Kumar, Jordan Anderson, Roman Manetsch: Development of a Labeling Probe for the Discovery and Identification of Saccharide-Binding Proteins. 2009 USF Symposium on Drug Design, Discovery, and Delivery (Florida Center of Excellence for Biomolecular Identification and Targeted Therapeutics). Tampa, FL, United States, October 14 to 16, 2009.
28) Shikha Mahajan, David Merkler, Roman Manetsch: Synthesis of biotinylated-azido-adenine ribose derivative analogues: Potential activity-based protein profiling probes. 2009 USF Symposium on Drug Design, Discovery, and Delivery (Florida Center of Excellence for Biomolecular Identification and Targeted Therapeutics). Tampa, FL, United States, October 14 to 16, 2009.
27) Sameer Kulkarni, Xiangdong Hu, Kenichiro Doi, Hong-Gang Wang, Roman Manetsch, Kinetic Target-Guided Synthesis for the Identification of Bcl-xL-Protein Interaction Modulators. 2009 USF Symposium on Drug Design, Discovery, and Deliver (Florida Center

of Excellence for Biomolecular Identification and Targeted Therapeutics). Tampa, FL, United States, October 14 to 16, 2009.

26) Shikha Mahajan, David Merkler, Roman Manetsch: Synthesis of biotinylated azido adenineribose derivative analogues: Potential activity based protein profiling probes. VIII European Symposium of the Protein Society. Zurich, Switzerland, June 14 to 18, 2009.

25) Roman Manetsch, Sameer Kulkarni, Xiangdong Hu, Hong-Gang Wang: Kinetic Target-Guided Synthesis for the Identification of Bcl-xL-Protein Interaction Modulators. Gordon Research Conference, Proctor Academy. Andover, NH, United States, June 14 to 19, 2009.

24) Petoria Gayle, Sameer Kulkarni, Xiangdong Hu, Hong-Gang Wang, Roman Manetsch: Protein-Protein Interaction Modulators and Role of Kinetic Target Guided Synthesis. 2009 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 18, 2009.

23) Kurt Van Horn, Roman Manetsch: Templated Assembly of DNA Fragments via Complimentary Reactive Functionalities. 2009 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 18, 2009.

22) Mario Martinez, Xiangdong Hu, Hong-Gang Wang, Roman Manetsch: Development of a SAR-by-MS Screening Platform Targeting Bcl-2 Proteins. 2009 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 18, 2009.

21) Roman Manetsch: Kinetic Target-Guided Synthesis for the Identification of Bcl-xL-Protein Interaction Modulators. 2009 CHI's Fragment-Based Drug Discovery Conference. San Diego, CA, United States, April 6 to 8, 2009.

20) Mario Martinez, Xiangdong Hu, Hong-Gang Wang, Roman Manetsch: Development of SAR-by-MS for proteins of the Bcl-2 family. USF Undergraduate Research Symposium and Celebration. Tampa, FL, United States, April 4, 2009.

Awarded with the 1st prize for best oral presentation by an undergraduate student.

19) Arun Babu Kumar, Jordan Anderson, Roman Manetsch: Development of a labeling probe for the discovery and identification of saccharide-binding proteins. ACS National Meeting and Exposition. Salt Lake City, UT, United States, March 22 to 26, 2009.

18) Roman Manetsch: Kinetic Target-Guided Synthesis for the Identification of Bcl-xL-Protein Interaction Modulators. 2009 Molecular Medicine Tri-Conference. San Francisco, CA, United States, February 3 to 5, 2009.

17) Jordany Maignan, R. Matt Cross, Tina Mutka, Dennis Kyle, Roman Manetch: SAR Study of 1,2,3,4-Tetrahydroacridones for the Development of Chemotypes Targeting Atovaqoune Resistant Malaria Parasites. 2008 Poster Symposium & Competition "Global Challenges for the 21st Century." Tampa, FL, United States, November 6, 2008.

16) Sameer Kulkarni, Jiazhi Sun, Hong-Gang Wang, Roman Manetsch: Targeting protein-protein interactions via *in situ* click chemistry. ACS National Meeting and Exposition. Philadelphia, PA, United States, August 17 to 21, 2008.

15) Xiangdong Hu, Jiazhi Sun, Hong-Gang Wang, Roman Manetsch: Bcl-templated assembly of its own protein-protein interaction modulators. ACS National Meeting and Exposition. Philadelphia, PA, United States, August 17 to 21, 2008.

14) Sameer Kulkarni, Xiangdong Hu Hong-Gang Wang, Roman Manetsch: Application of Target Guided Synthesis (TGS) approach: Targeting protein-protein interactions. Florida Annual Meeting and Exposition 2008 (ACS Regional Meeting). Orlando, FL, United States, May 8 to 10, 2008.

13) Arun Babu Kumar, Jordan Anderson, Roman Manetsch: Development of a Labeling Probe for the Discovery and Identification of Saccharide-Binding Proteins. Florida Annual Meeting and Exposition 2008 **(**ACS Regional Meeting). Orlando, FL, United States, May 8 to 10, 2008.
12) Arun Babu Kumar, Roman Manetsch: Development and synthesis of photoaffinity labeling probe for target selective proteomics. 2008 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 19, 2008.
11) Sameer Kulkarni, Jiazhi Sun, Hong-Gang Wang, Roman Manetsch: Kinetic Target-Guided Synthesis for the Identification of Bcl-xL-Protein Interactions Modulators. 2008 USF Raymond Castle Student Research Conference. Tampa, FL, United States, April 19, 2008.
10) Christi Young, Roman Manetsch, Edwin Rivera, Alberto van Olphen, Alfredo E. Cardenas: Molecular dynamics of the RNA-binding domain of Influenza A NS1. ACS National Meeting and Exposition. New Orleans, LA, United States, April 6 to 10, 2008.
9) Richard M. Cross, Gregory A. Hunter, Gloria C. Ferreira, Roman Manetsch: Screening of libraries for inhibitors or activators of the enzyme 5-aminolevulinate synthase. ACS National Meeting and Exposition. New Orleans, LA, United States, April 6 to 10, 2008.
8) Shikha Mahajan, David Merkler, Roman Manetsch: Synthesis of biotinylated azido adenineribose derivative analogues: Potential activity based protein profiling probes. ACS National Meeting and Exposition. New Orleans, LA, United States, April 6 to 10, 2008.
7) Mario Martinez, Shikha Mahajan, Roman Manetsch: Development of a Photoaffinity Labeling Probe. USF Undergraduate Research Symposium and Celebration. Tampa, FL, United States, April 2, 2008.

Awarded with the 1st prize for best oral presentation by an undergraduate student.

6) Richard M. Cross, Tina Mutka, Dennis E. Kyle, Roman Manetsch: Quinolones as Novel Chemotypes Targeting Atovaquone Resistant Malaria Parasites. 18th Annual 2008 USF Health Research Day. Tampa, FL, United States, February 22, 2008.
5) Shikha Mahajan, David Merkler, Roman Manetsch: Synthesis of biotinylated-azido-adenine-ribose derivatives analogues: Potential activity based protein profiling (ABPP) probes. 18th Annual 2008 USF Health Research Day. Tampa, FL, United States, February 22, 2008.
4) Xiangdong Hu, Sameer S. Kulkarni, Lisa Malmgren, Jiazhi G. Sun,Hong-Gang Wang, Roman Manetsch: Bcl-X_L-templated assembly of its own protein-protein interaction modulators. 18th Annual 2008 USF Health Research Day. Tampa, FL, United States, February 22, 2008.
3) Arun B. Kumar, Roman Manetsch: Development of a Labeling Probe for the Discovery and Identification of Saccharide-Binding Proteins. 18th Annual 2008 USF Health Research Day. Tampa, FL, United States, February 22, 2008.
2) Shikha Mahajan, David Merkler, Roman Manetsch: Synthesis of biotinylated-azido-adenine ribose derivative analogues: Potential activity based protein profiling probes. USF Symposium on Drug Design, Discovery, and Delivery (Florida Centre of Excellence for Biomolecular Identification and Targeted Therapeutics). Tampa, FL, United States, October 25 to 26, 2007.
1) Richard Matthew Cross, Zoran Radic, Palmer Taylor, Roman Manetsch: Synthesis of IBTZ6PA2: A potential acetylcholinesterase inhibitor displaying improved species specificity. Florida Annual Meeting and Exposition 2007 (ACS Regional Meeting). Orlando, FL, United States, April 12, 2007.

Funding Summary

- Active Awards, September 2022: Total funding (Northeastern University and collaborating institutions), direct and indirect costs $12,853,192; Funding Manetsch Laboratory, direct and indirect costs $5,235,254; Funding Manetsch Laboratory, direct costs $3,535,560
- Completed Awards at Northeastern University: Funding Manetsch laboratory (direct and indirect costs) $1,260,651; Funding Manetsch Laboratory (direct costs) $736,114
- Completed Awards at University of South Florida: Funding Manetsch laboratory (direct and indirect costs) $3,322,928; Funding Manetsch Laboratory (direct costs) $2,062,934

Current/Active Awards – Principal Investigator - External

(unless specified, total budget comprises of direct and indirect costs)

5) National Institutes of Health, National Institute of Allergy and Infectious Diseases (R01AI157208): Use of De Novo Synthesis Approaches and Structure-guided Design to Optimize Therapeutic Properties of Streptothricin Class Antimicrobials. Total budget $3,977,758 ($1,413,000 Manetsch total budget; $900,000 Manetsch direct costs) 09/01/2020 - 08/31/2025. Contact PI James E. Kirby (Beth Israel Deaconess Medical Center) and PIs Edward Yu (Case Western Reserve University), and Roman Manetsch; CI George O'Doherty (Northeastern University).

4) National Institutes of Health, National Institute of Allergy and Infectious Diseases (R01AI153290): Lead Optimization and Target Identification of Drugs Targeting Hypnozoites. Total budget $3,506,812 ($1,166,812 Manetsch total budget; $750,000 Manetsch direct costs) 08/01/2020 - 07/31/2025. Contact PI Dennis E. Kyle (University of George, Athens) and PIs Benoit Witowski (Institute Pasteur in Cambodia), and Roman Manetsch.

3) National Institutes of Health, National Institute of Allergy and Infectious Diseases (R01AI144464): Orally Bioavailable 4(1*H*)-Quinolones with Multi-Stage Antimalarial Activity. Total budget $3,672,359 ($1,837,289 Manetsch total budget; $1,170,248 Manetsch direct costs) 04/11/2019 - 04/10/2024. Contact PI Roman Manetsch and PI Dennis E. Kyle (University of George, Athens).

2) National Institutes of Health, National Institute of Allergy and Infectious Diseases (R21AI140212): Development of Streptothricin Class Antimicrobials as Novel Therapeutics. Total budget $467,498 ($215,185 Manetsch total budget; $137,061 Manetsch direct costs) 03/01/2019 - 02/28/2023 (NCE). Contact PI Roman Manetsch and PI James E. Kirby (Beth Israel Deaconess Medical Center).

1) Medicines for Malaria Venture (RD-17-0036): Antimalarial Compounds Targeting Liver Stages of *Plasmodium vivax*. $475,079 Manetsch direct costs 01/01/2018 - 12/31/2022 (award is renewed annually). Contact PI Dennis E. Kyle, and PI Roman Manetsch. Note: Medicines for Malaria Venture provides additional resources for evaluating compound in academic and industrial laboratories partnering with Medicines for Malaria Venture. Furthermore, in 2020-2022, synthetic chemists (2.0 FTEs) at TCG Lifesciences (Kolkata, India) dedicated to this project are funded by Medicines for Malaria Venture. The scope of this work focuses on the development of a compound series displaying anti-hypnozoite activity.

Current/Active Awards – Co-Investigator – External

(unless specified, total budget comprises of direct and indirect costs)

2) National Institutes of Health, National Institute on Deafness and Other Communication Disorders (R21DC020136): Molecular Mechanism of the Bitter Taste of HIV/AIDS Drugs and its Inhibition. Total budget $431,750 ($20,844 Manetsch direct costs) 07/01/2022 - 06/30/2024. PI Meng Cui (Northeastern University); CI Diomedes Logothetis (Northeastern University) and Roman Manetsch.
1) National Institutes of Health, National Institute of Allergy and Infectious Diseases (R01AI 154860): De Novo Synthesis, and Functional and Structural Characterization of Novel Aminoglycoside Analogues to Bypass Resistance Mechanisms and Optimize Selectivity. Total budget $3,261,596 ($1,233,200 NEU total budget; $4,424 Manetsch direct costs) 08/01/2020 - 07/31/2024. Contact PI James E. Kirby (Beth Israel Deaconess Medical Center) and PIs Edward Yu (Case Western Reserve University), and George O'Doherty (Northeastern University); CI Roman Manetsch.

Completed Awards - External

(unless specified, total budget comprises of direct and indirect costs)

12) National Institutes of Health, National Institute of Allergy and Infectious Diseases (5R33-AI119114): Plasmid Eviction to Restore Susceptibility in Carbapenem-Resistant Enterobacteriaceae. Total budget unknown ($91,020 Manetsch total budget; $57,975 Manetsch direct costs) 07/01/2018 - 06/30/2022 (NCE). PI James E. Kirby (Beth Israel Deaconess Medical Center) and CI Roman Manetsch.
11) Amyotrophic Lateral Sclerosis Association (18-IIA-420): Tethering SOD1 Cysteine Pairs with Cyclic Disulfides: a New Method for Protein Stabilization. Total budget $300,000 (10% indirect costs allowed); ($92,937 Manetsch total budget; $84,488 Manetsch direct costs), 10/01/2017 - 09/31/2020. PI Jeffrey N. Agar (Northeastern University), CI Mary Jo Ondrechen (Northeastern University), and CI Roman Manetsch.
10) Medicines for Malaria Venture (16/00421): Prodrugs of Antimalarial 4(1*H*)-Quinolones. $24,218.41 direct costs (no indirect costs allowed); ($24,218.41 Manetsch direct costs) 06/01/2016 - 05/31/2017. PI Roman Manetsch. Note: Medicines for Malaria Venture provided additional resources for evaluating our prodrug compound in academic and industrial laboratories partnering with Medicines for Malaria Venture. The costs associated to these studies have been charged directly to Medicines for Malaria Venture. The scope of this work focused on evaluating whether our prodrug approach has potential for clinical development.
9) National Institutes of Health, National Institute of General Medical Sciences (1R01GM097118): Drugs Targeting Erythrocytic and Exoerythrocytic Stages of Malaria. Total budget $1,361,229 ($952,861 Manetsch total budget; $657,146 Manetsch direct costs) 09/15/2011 - 05/31/2017. PI Roman Manetsch; CI Dennis Kyle (University of South Florida, Department of Global Health).
8) National Institutes of Health, National Institute of Allergy and Infectious Diseases Partnerships with Product Development Public-Private Partnerships (1R01AI090662): Drug Validation of New Antimalarial Leads. Total budget $5,721,270 ($1,111,636 Manetsch total budget; $766,646 Manetsch direct costs), 06/01/2011 - 07/31/2017. Lead PI Jeremy Burrows (Medicines for Malaria Venture) and PIs Kip Guy (St. Jude Children's Research Hospital,

Chemical Biology and Therapeutics), Dennis Kyle (University of South Florida, Department of Global Health), David Floyd (Rutgers, Department of Chemistry), and Roman Manetsch.

7) National Institutes of Health, National Institute of Allergy and Infectious Diseases (R21): Antileishmanial Lead Optimization of Quinazolines. Total budget $432,963 ($115,274 Manetsch budget; $78,418 Manetsch direct costs), 07/01/2012 - 06/30/2014. PI Karl Werbovetz (The Ohio State University, Department of Medicinal Chemistry); CIs Roman Manetsch and Zhuo (Michael) Wang (University of Kansas, Pharmaceutical Chemistry).
6) Medicines for Malaria Venture (11/0022): Quinolones for Single Exposure Radical Cure, $182,108 direct costs (no indirect costs allowed); ($83,724 Manetsch direct costs), 03/01/2012 - 12/31/2012 (continuation upon meeting milestones). PI Dennis Kyle (University of South Florida, Department of Global Health); CI Roman Manetsch. Note: Medicines for Malaria Venture provided additional resources for evaluating our compound in academic and industrial laboratories partnering with Medicines for Malaria Venture. The costs associated to these studies have been charged directly to Medicines for Malaria Venture.
5) Medicines for Malaria Venture (08/0068): Quinolone and 1,2,3,4-Tetrahydroacridone Chemotypes for Malaria Drug Discovery. $859,086 direct costs (no indirect costs allowed); ($449,127 Manetsch budget; direct costs), 11/01/2008 - 12/31/2012 (annually renewed; notified on 05/22/2012 that project will be terminated due to successful delivery of a preclinical candidate, which has been taken forward by MMV's translational team). PI Roman Manetsch; CI Dennis Kyle (University of South Florida, Department of Global Health). Note: Medicines for Malaria Venture provided additional resources for evaluating our compounds in academic and industrial laboratories partnering with Medicines for Malaria Venture. The costs associated to these studies have been charged directly to Medicines for Malaria Venture.
4) Bankhead-Coley Biomedical Research Program, Florida Department of Health (08BN-04): Chemical Tools for Proteomic Profiling. Total budget $375,000 (10% indirect costs allowed); ($173,610 Manetsch total budget; $157,827 Manetsch direct costs), 07/01/2008 - 12/31/2011. PI Roman Manetsch; CI David Merkler (University of South Florida, Department of Chemistry), Mentor Mark McLaughlin (University of South Florida, Department of Chemistry)
3) James and Esther King Biomedical Research Program, Florida Department of Health (07KN-08): Bcl-X_L-Templated Assembly of Compounds Modulating Bcl-X_L-Protein Interactions. Total budget $375,000 (10% indirect costs allowed); ($337,612 Manetsch total budget; $306,920 Manetsch direct costs), 07/01/2007 - 12/31/2010. PI Roman Manetsch; Mentor Wayne Guida (University of South Florida, Department of Chemistry).
2) Johnnie B. Byrd, Sr. Alzheimer's Center and Research Institute, Seed Grant: Adenylomics and Caffeinylomics. Total budget $40,793 (10% indirect costs allowed); ($21,443 Manetsch total budget; $19,494 Manetsch direct costs), 09/01/2008 - 08/31/2009. PI Roman Manetsch; CI David Merkler (University of South Florida, Department of Chemistry).
1) American Cancer Society Institutional Grant Program, Cycle 20, Fall 2005: Bcl-xL-Templated Assembly of Compounds Modulating Bcl-xL. $20,000 direct costs (no indirect costs allowed), 04/01/2006 - 03/31/2007. PI Roman Manetsch.

Current/Active Awards - Internal

(unless specified, total budget comprises of direct and indirect costs)

1) NEU 2023 Tier 1 Seed Grant: Strategy for Broad Spectrum Corona Virus Treatment. $50,000 direct costs (no indirect costs allowed); ($25,000 Manetsch direct costs) 07/01/2022 - 09/30/2023. PI Jeffrey N. Agar (Northeastern University); CI Roman Manetsch.

Completed Awards – Internal

(unless specified, total budget comprises of direct and indirect costs)

7) Florida Center of Excellence - BITT Seed Grant: Evaluation of a Phosphotyrosin Phosphatase as an Antimalarial Drug Target. $75,000 direct costs (no indirect costs allowed); ($33,000 Manetsch direct costs), 07/01/09 - 12/31/11. PI John Adams (University of South Florida, Department of Global Health); CI Roman Manetsch.
6) Florida Center of Excellence - BITT Seed Grant: Characterization of Candida Cytochrome b5 Reductase as Pharmacological Target, $75,000 direct costs (no indirect costs allowed); ($33,000 Manetsch direct costs), 07/01/09 - 12/31/11. PI Andreas Seyfang (University of South Florida, Molecular Medicine); CI Roman Manetsch.
5) Florida Center of Excellence - BITT Seed Grant, GALS007: Adenylomics. $75,000 direct costs (no indirect costs allowed); ($37,000 Manetsch direct costs), 05/01/2008 - 04/30/2009. PI David Merkler (University of South Florida, Department of Chemistry); CI Roman Manetsch.
4) Florida Center of Excellence - BITT Seed Grant, GALS008: SAR Study of Quinolones and 1,2,3,4-Tetrahydroacridones for the Development of Novel Chemotypes Targeting Atovaquone Resistant Malaria Parasites. $75,000 direct costs (no indirect costs allowed); ($38,000 Manetsch direct costs), 05/01/2008 - 04/30/2009. PI Roman Manetsch; CI Dennis Kyle (University of South Florida, Department of Global Health).
3) Florida Center of Excellence - BITT Thrust Graduate Scholar, Ph.D. scholarship for graduate student Richard M. Cross: Discovery of Lead Compounds Targeting the Enzyme 5-Aminolevulinate Synthase. $40,000, 09/01/2007 - 08/31/2009. PI Roman Manetsch.
2) University of South Florida, Interdisciplinary Research Development Grant: Development of Novel Antiviral Compounds Targeting Non-structural Protein 1. $49,872 direct costs (no indirect costs allowed); ($16,624 Manetsch direct costs), 03/01/2006 - 02/29/2008. PI Roman Manetsch; CIs Alberto van Olphen (University of South Florida, Center for Biological Defense) and Edwin Rivera (University of South Florida, Department of Chemistry).
1) University of South Florida, Interdisciplinary Research Development Grant: Development of Novel Antiviral Compounds Against Influenza. $19,994 direct costs (no indirect costs allowed); ($6,372 Manetsch direct costs), 02/01/2006 - 01/31/2007. PI Alberto van Olphen (University of South Florida, Center for Biological Defense); CIs Roman Manetsch and Edwin Rivera (University of South Florida, Department of Chemistry).

TEACHING AND TRAINING ACTIVITIES

Courses (NEU)

Student's evaluations are given in parenthesis (instructor effectiveness; # of responded evaluations/# of enrolled students)

7) *CHEM2315 Organic Chemistry 1: Chemistry Majors:* Fall 2015 (3.3/5.0; 31/49).
6) *PHSC2650 Intro to Health Science Research* (1 lecture): Spring 2022 (4.7/5.0; 18/23).

5) *CHEM5626 Organic Synthesis:* Fall 2016 (5.0/5.0; 6/9), Fall 2017 (4.9/5.0; 14/15), Fall 2018 (4.9/5.0; 17/19), Fall 2019 (4.8/5.0; 14/15), Fall 2020 (4.8/5.0; 5/8), Fall 2021 (4.9/5.0; 16/20); Fall 2022 (4.8/5.0; 17/24).
4) *PHSC5400 Principles of Drug Design:* Fall 2016 (4.6/5.0; 10/12), Fall 2017 (4.9/5.0; 9/9), Fall 2018 (4.9/5.0; 8/9), Fall 2019 (4.9/5.0; 10/12), Fall 2020 (5.0/5.0; 5/6), Fall 2021 (5.0/5.0; 5/6); Fall 2022 (4.9/5.0; 5/6).
3) *PHSC5360 Anti-Infectives* (1 lecture and course coordination): Summer 2018 (4.1/5.0; 138/144), Summer 2019 (4.1/5.0; 109/114); Summer 2020 (4.1/5; 135/140); Summer 2021 (4.2/5; 85/88); Summer 2022 (3.7/5; 95/95)
2) *CHEM5676 Bioorganic Chemistry* (1 lecture): Spring 2016 (not evaluated), Spring 2017 (4.8/5.0; 9/11), Spring 2018 (4.8/5.0; 12/13), Spring 2019 (not evaluated), Spring 2020 (not evaluated), Spring 2022 (not evaluated).
1) *PHSC6314 Special Topics Pharm Science* (1 lecture): Summer 2020 (not evaluated).

Courses (USF)
6) *CHM2210 Organic Chemistry I:* Spring 2007, Spring 2008, Fall 2008, Spring 2009, Fall 2009, Spring 2010, Spring 2011, Spring 2014 (undergraduate level course).
5) *CHM2211 Organic Chemistry II:* Spring 2012 (undergraduate level course).
4) *CHM6250/5225 Advanced Organic Chemistry I:* Fall 2005, Fall 2006, Fall 2007, Fall 2013 (dual listed graduate and undergraduate level course).
3) *CHM6935 Graduate Seminar:* Fall 2006, Spring 2007, Fall 2007, Spring 2008, Fall 2008, Spring 2009, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012 (coordinating CHM6935 Graduate Seminar program).
2) *CHM6938/4932 Spectroscopy:* Fall 2010, Fall 2011 (dual listed graduate and undergraduate level course).
1) *CHM6938/PHC7931 Drug Discovery for Tropical Diseases:* Spring 2010, Spring 2012, Spring 2014 (graduate level course).

Postdoctoral Associates
10) Dr. Chungsik Kim, September 2016 – August 2020
9) Dr. Prakash Parvatkar, September 2016 – August 2018
8) Dr. Abdul Shaikh, September 2015 – August 2017
7) Dr. Fabian Brockmeyer, June 2015 – May 2017
6) Dr. Yana Sakhno, June 2012 – August2013
5) Dr. Raghupathi Neelarapu, May 2012 – July 2014
4) Dr. Niranjan Namelikonda, May 2009 – September 2014
3) Dr. David Flanigan, April 2009 – October2014
2) Dr. Yijun Yiang, September 2009 – December2010
1) Dr. Xiangdong Hu, September 2006 – April2009

Thesis and Dissertation Research Supervision
25) Yuliya Marusyk (Chemistry and Chemical Biology), 2022 – present, Ph.D. student
24) Khaly Diagne (Chemistry and Chemical Biology), 2022 – present, Ph.D. student
23) Roger Trombley (Chemistry and Chemical Biology), 2022 – present, Ph.D. student
22) Ling Cheng (Pharmaceutical Sciences), 2021 – present, M.S. candidate
21) Alicia Wagner (Chemistry and Chemical Biology), 2020 – present, Ph.D. candidate

20) Christina Di Marco (GlaxoSmithKline; co-advisor Dr. Brandon Turunen), 2019 – present, industrial Ph.D. candidate
19) Lili Huang (Chemistry and Chemical Biology), 2019 – present, Ph.D. candidate
18) Ami Asakawa (Pharmaceutical Sciences), 2019 – present, Ph.D. candidate
17) Brandon Miller (Chemistry and Chemical Biology), 2019 – present, Ph.D. candidate
16) Mintesinot Kassu (Chemistry and Chemical Biology), 2018 – present, Ph.D. candidate
15) Yingzhao (David) Zhao (Chemistry and Chemical Biology), 2015 – 2020, *Studies towards the Total Synthesis of Anguidine and Anguidine-like Scaffolds*, Ph.D. from NEU
14) Matthew Dowgiallo (Chemistry and Chemical Biology), 2015 – 2020, *Combating the Rise of Antimicrobial Resistance: Permeation and Efflux Multiparameter Optimization and A Divergent Total Synthesis of Streptothricin F*, Ph.D. from NEU
13) Jackson Cacioppo (Chemistry and Chemical Biology), 2017 – 2019, *Synthesis of 3-Trifluoromethyl-3-Pyrimidinyl Diazirines as Photoreactive Amino Acid Analogs*, M.S. from NEU
12) Iredia D. Iyamu (Chemistry and Chemical Biology), 2010 – 2016, *Design, Synthesis and Evaluation of Spirocyclic Chromanes, Dihydropyridines, and Naphtoquinones as Antimalarial Agents*, Ph.D. from NEU
11) Cynthia Lichorowic (Chemistry and Chemical Biology), 2010 – 2016, *Studies on Antimalarial Activity, Physicochemical Properties and Mechanism of Action of 4(1H)-quinolones and Artemisinin*, Ph.D. from NEU
10) Megan Barber, 2012 – 2015. *2,4-Disubstituted Quinazolines with Antileishmanial or Antibacterial Activity*, M.S. from USF
9) Jordany R. Maignan, 2009 – 2015, *Development of Orally Bioavailable 4(1H)-Quinolones and 1,2,3,4-Tetrahydroacridin-9(10H)-ones with Potent Antimalarial Activity*, Ph.D. from USF
8) Andrii Monastyrskyi, 2008 – 2014, *Synthesis and Evaluation of 3-Aryl-4(1H)-Quinolones as Orally Active Antimalarials: Overcoming Challenges in Solubility, Metabolism, and Bioavailability*, Ph.D. from USF
7) Kurt Van Horn, 2007 – 2013, *Anti-Parasitic and Anti-Bacterial Agents: Studies on 1,4-Dihydropyridines and 2,4-Diaminoquinazolines*, Ph.D. from USF
6) Katya Nacheva, 2007 – 2012, *Design and Synthesis of a Molecular Fluorescent Probe and its Role of Kinetic Target-Guided Synthesis to Identify Inhibitors of Enzymatic and Protein-Protein Interaction Targets*, Ph.D. from USF
5) Sameer S. Kulkarni, 2006 – 2012, *Development and Optimization of Kinetic Target-Guided Synthesis Approaches Targeting Protein-Protein Interactions of the Bcl-2 Family*, Ph.D. from USF
4) Arun B. Kumar, 2006 – 2012, *Design, Synthesis and Evaluation of Novel Diazirine Photolabels with Improved Ambient Light Stability and Fluorous-Based Enrichment Capacity*, Ph.D. from USF
3) Shikha Mahajan, 2006 – 2012, *Protein Profiling of Adenine Nucleoside and Nucleotide Analogs Binding Proteins Using N^6-Biotinylated-8-azidoadenosine Analogs as Affinity Based Protein Profiling Probes*, Ph.D. from USF (primary advisor David Merkler, Co-advisor Roman Manetsch)
2) R. Matthew Cross, 2005 – 2011, *Lead Discovery and Optimization Strategies Towards the Development of 4(1H)-Quinolone and 1,2,3,4-Tetrahydroacridone Analogs with Antimalarial Activity*, Ph.D. from USF
1) Lisa M. Malmgren, 2005 – 2007, *Using in Situ Click Chemistry to Modulate Protein-Protein Interactions: Bcl-xL as a Case Study*, M.S. from USF

Undergraduate Research

36) Kaia Ellis (REU student from Kennesaw State University), May 2022 – August 2022
35) Jacqueline Smith, June 2022 – present
34) Nathan Tang, January 2022 – present
33) Maris Podgurski, September 2021 – present
32) Victor Velazquez (student from Roxbury Community College), September 2021 – January 2022
31) Caroline Consoli, September 2021 – May 2022
30) Bruno Quiroga, August 2021 – May 2022
29) Yisakor Assefa (student from Roxbury Community College), June 2021 – August 2021
28) Anthony Marasciullo, January 2021 – May 2022
27) Hanna Warinner (student from University of Bath (UK)), November 2020 – August 2021
26) Anna Meglan, April 2020 – present
25) Tsedey Ayele (student from Roxbury Community College), May 2020 – December 2020
24) Karissa Carter (REU student from Norfolk State University), May 2019 – August 2019
23) Loren Po, January 2018 – December 2019
22) Grace Kiser, February 2018 – December 2018
21) Andrew Fetigan, January 2016 – April 2019
20) Liu Li, January 2016 – August 2016
19) Imran Sharif Elmaarouf, February 2016 – April 2019
18) Daniel Assad Saad September 2017 – December 2018
17) Michael Shultis, February 2015 – December 2016
16) Jackson Goodman Cacioppo, July 2016 – December 2016
15) Susan Anne Roberts, August 2016 – December 2016
14) Tanner C Jankins, October 2016 – December 2016
13) Madeline L MacDonnell, January 2016 – March 2016
12) Jake Ganley, January 2016 – June 2017
11) Lisa Barton, January 2015 – April 2016
10) Lauren Bertino, January 2016 – March 2016
9) Danielle Lefebvre, February 2016 – April 2016
8) Clarissa Santori, August 2016 – December 2017
7) Fabiola Caban (REU student from the Universidad Ana G. Méndez, San Juan, Puerto Rico), May 2016 – August 2016
6) James Giarrusso, 2011 – 2013, B.S. in Chemistry in 2012
5) Niles Gunsalus, 2010 – 2012, B.S. in Chemistry in 2012
4) Anthony Melendez, 2010 – 2012, B.S. in Biomedical Sciences in 2012
3) Lisa Luong, 2009 – 2011, B.S. in Biomedical Sciences in 2011
2) Jordan Anderson, 2008 – 2011, B.S. in Chemistry in 2011
1) Mario Martinez, 2007 – 2009, B.S. in Chemistry in 2009

Honors Undergraduate Thesis

4) Alexandra Griffin, 2010 – 2011, B.S. in Biomedical Sciences in 2011
3) Lisa Luong, 2010 – 2011, B.S. in Biomedical Sciences in 2011
2) Jordan Anderson, 2010 – 2011, B.S. in Chemistry in 2011
1) Mario Martinez, 2008 – 2009, B.S. in Chemistry in 2009

Doctoral Committee Service, NEU (students that are not members of the Manetsch laboratory).
27) Sean A. Chin Chan, The H. Lee Moffitt Cancer Center and Research Institute, Florida
26) Negar Shahsavari, Biology
25) Novera Alam, Chemistry and Chemical Biology
24) Alhanouf Aljahdali, Chemistry and Chemical Biology
23) Krishna Chaitanya Aluri, Chemistry and Chemical Biology
22) Jing Chai, Chemistry and Chemical Biology (industrial student)
21) Yang Fang, Chemistry and Chemical Biology
20) Erica Hess, Chemistry and Chemical Biology
19) Ian Hicks, Chemistry and Chemical Biology
18) Bohui Li, Chemistry and Chemical Biology
17) Hao Lu, Chemistry and Chemical Biology
16) Md Amin Hossain, Chemistry and Chemical Biology
15) Caroline Millard, Chemistry and Chemical Biology
14) Debarpita Ray, Chemistry and Chemical Biology
13) Richa Sarin, Chemistry and Chemical Biology
12) Wensheng Yang, Chemistry and Chemical Biology
11) Harvens Beauzile, Pharmaceutical Sciences
10) Othman Benchama, Pharmaceutical Sciences
9) Lucas Cantwell, Pharmaceutical Sciences
8) Dimitris Gazgalis, Pharmaceutical Sciences
7) Markos Georgiadis, Pharmaceutical Sciences
6) Maria Gerasi, Pharmaceutical Sciences
5) Peter Schaffer, Pharmaceutical Sciences
4) Fei Tong, Pharmaceutical Sciences
3) Wilder Felix, Pharmaceutical Sciences
2) Brenda Winn, Pharmaceutical Sciences
1) Andrew Zorn, Pharmaceutical Sciences

External Ph.D. Thesis Examiner
3) Sean Chin Chan, Drug Discovery, the H. Lee Moffitt Cancer Center, Tampa (FL), USA (2021)
2) Peter Mubanga Cheuka, Department of Chemistry, University of Cape Town, South Africa (2018)
1) Leon Jacobs, Stellenbosch University, South Africa (2018)

External M.S. Thesis Examiner
1) Pieter Cilliers, Department of Pharmacy, North-West University, South Africa (2018)

SERVICE

Service to the Department of Chemistry and Chemical Biology
6) Safety Officer of the Department of Chemistry and Chemical Biology (2016 – present)
5) Chair of Antimicrobials and Disease Strategy faculty search (joint search with the Biology, Chemical Engineering, and Pharmaceutical Sciences departments) (2022 – present)

4) Executive Committee of the Department of Chemistry and Chemical Biology (2016 – present)
3) Student Recruiting/Admissions Committee of Chemistry and Chemical Biology (2015, and 2017 – present)
2) Committee for (Bio)Analytical Chemistry faculty search. Faculty search ended successfully with the hire of Dr. Leila Deravi (2015 – 2016)
1) Committee CCB laboratory design in new building of Northeastern University ISEC Phase 2 (2019 – present)

Service to the Department of Pharmaceutical Sciences

5) Associate Chair for Research (2021 – present)
4) Chair of Drug Discovery and Artificial Intelligence faculty search (joint search with the Bioengineering Department) (2021– 2022)
3) Student Recruiting/Admissions Committee of Pharmaceutical Sciences (2016 – 2020)
2) Instrumentation Committee of Pharmaceutical Sciences (2016 – 2017)
1) Committee for Natural Product Chemistry faculty search (joint search with Chemistry and Chemical Biology) (2015 – 2016)

Service to the College of Science and Bouvé College of Health Sciences

4) Committee for Anti-microbial Discovery faculty search in the Department of Biology. Faculty search ended successfully with the hire of Dr. Nick Takacs (2021-2022)
3) Department Search Representative,* search for Analytical and/or Environmental Chemistry Faculty Position (2021)
2) Department Search Representative,* search for Sustainable Energy and Materials Faculty Position (2021)
1) Pharmacy's Academic and Professional Standing Committee** (2020 – 2021)

[*Department Search Representative to assist with sorting through the long list of faculty candidates and to justify why each woman or racial minority candidate is not included on the short list of the invited/interviewed candidates. The Department Search Representative is not a member of the search committee. The Representative is given access to search folders and work in a two-day turnaround so as not to delay the search process. There are up to ~10 candidates to sort through. The service of the Department Search Representative is counted as CoS and Department service; **Pharmacy's Academic and Professional Standing Committee at its core is tasked with ensuring student academic and professional success, and reviewing students who may experience academic and/or professional concerns within the School of Pharmacy e.g. course deficiencies, failures, dismissals. The committee meets at the beginning of the semester for 4-7 hours to process student's requests from the previous semester.]

Service to the University

4) Faculty Director for the Nuclear Magnetic Resonance Core Facility (2021 – present)
3) Chair of NEU's Laboratory Safety Hygiene Committee (2020 – present)
2) NEU's Laboratory Safety Hygiene Committee (2016 – present)
1) Committee member focusing on the design of research resumption tracking software called Service Now SNOW*** (2020 – 2021)

[***The committee comprises of staff and administrators from various Colleges and Departments. The committee meets weekly for approximately 60 minutes. As the only faculty member in the committee, I am responsible that software design meets the needs of faculty members.]

Service to the Discipline

9) Reviewer of scientific manuscripts: ACS Chemical Biology, ACS Infectious Diseases, ACS Medicinal Chemistry Letters, Angewandte Chemie International Edition, Antimicrobial Agents

and Chemotherapy, Bioorganic and Medicinal Chemistry, Bioorganic and Medicinal Chemistry Letters, ChemBioChem, Chemical Biology and Drug Design, Chemical Science, Chemical Reviews, Chemistry – An Asian Journal, Chemistry – A European Journal, ChemMedChem, Drug Discovery Today, European Journal of Medicinal Chemistry European Journal of Organic Chemistry, Helvetica Chimica Acta, Heterocyclic Communications, Journal of the American Chemical Society, Journal of Computer-Aided Molecular Design, Journal of Natural Products, Journal of Organic Chemistry, Journal of Medicinal Chemistry, Medicinal Research Reviews, Nature Chemistry, Organic and Biomolecular Chemistry, Organic Letters, Proceedings of the National Academy of Sciences, RSC Advances.

8) Reviewer National Institutes of Health:
   - NIH/ZRG1 IDM-T(82), R21s, and R03s (March 2015)
   - NIH/DDR, R01s (June 2015)
   - NIH/ZAI1 LC-M-J, Special Emphasis Panel International Centers of Excellence for Malaria Research U19 (September 2016)
   - NIH/SBCA, R01s, R03s, R15s, and R21s (June 2017)
   - NIH/ZAI1 LG-M(J2) Special Emphasis Panel RFA AI-17-042, Centers of Excellence for Translational Research, U19 (October 2018)
   - NIH/ZRG1 IDM-S(83) A R03s and R15s (July 2019)
   - NIH/ZRG1 IDM-Y(82), R03s, and R21s (March 2020)
   - NIH/Emergency COVID-19 and SARS/CoV-2 Grants Review, R01s and R21s (July 2020)
   - NIH/Emergency COVID-19 and SARS/CoV-2 Grants Review, R01s and R21s (September 2020)
   - NIH/Emergency COVID-19 and SARS/CoV-2 Grants Review, R01s and R21s (January 2021)
   - NIH Special Emphasis Panel, Drug Discovery and Mechanisms of Resistance in Eukaryotic Pathogenic Organisms, R01s and R21s (December 2021)
   - NIH/ZRG1 AIDC-B(83) Special Emphasis Panel on Eukaryotic Pathogen Drug Discovery and ResistanceR01s and R21s (July 2022)
   - NIH/SBCB, R01s, R15s, R21s, and R03s (October 2022)

7) Reviewer Department of Defense:
   - Peer Review Medical Research Program (PRMRP) Preapplications – Malaria (July 2014)
   - PRMRP Applications – Malaria (November 2014)
   - PRMRP Preapplications – Malaria (June 2015)
   - PRMRP Preapplications – Malaria (July 2016)
   - Military Infectious Diseases Research Program (MIDRP) panel on antiparasitic drugs (February 2017)
   - PRMRP Preapplications – Malaria (July 2018)
   - MIDRP panel on antiparasitic drugs (February 2019)
   - PRMRP Preapplications – Malaria (June 2021)
   - PRMRP Applications – Malaria (November 2021)
   - PRMRP Applications – Malaria (August 2022)

6) Reviewer grant applications for Dana-Farber Cancer Institute/Northeastern University, Joint Program in Cancer Drug Development (2015).

5) Reviewer grant applications for the Dutch Product Development Partnership III Fund (2015).

4) Reviewer grant applications for King Abdulaziz City for Science and Technology (KACST); review organized by the American Association for the Advancement of Science (AAAS) (2018).
3) Conference Session Chair: Boston Symposium on Organic Chemistry and Bioorganic Chemistry, Boston, USA (October 2015); International Pharma Conference and Expo, Rome, Italy, (May 2018); Amoeba Summit, Orlando, USA (September 2019); 3rd International Conference on PharmaScience Research and Development, virtual (February 2021).
2) Active Member of Science Department Advisory Board, Roxbury Community College, Massachusetts (2019 – present); research advising with Professor Kimberly Stieglitz of undergraduate student Tsedey Ayele (June-December 2020) and Yisakor Assefa (June-September 2021); projects conducted in my laboratory
1) Advisor of research tool development project by Computer Science undergraduate students of Northeastern University Sandbox Computer Science Club (September 2019 – December 2020)

Introduction to Health Science Research (PHSC 2650)

Course Registration Number (CRN) – 32879; Spring 2022

Northeastern University, Bouvé College of Health Sciences, Department of Pharmaceutical Sciences

COURSE DESCRIPTION

Surveys research methods and topics relevant to health science research with the goal to engage undergraduate students to commit to research training throughout at least one semester and possibly for the remaining of their undergraduate program (required for BSPS students). Students are exposed to lectures addressing the benefits of a research experience and learn to read original literature in order to better evaluate research interests as they explore laboratories of interest to join. Health science faculty across colleges present their lines of research focusing on projects that would be available to students. There is particular emphasis on highlighting the gaps in knowledge and innovative approaches to creatively fill the gaps in knowledge with new experimental results for the various research programs that the students are exposed to. The course seeks to familiarize students with use of the scientific method in addressing unanswered questions and to best prepare them to select the most appropriate research laboratory to engage in original research.

MISSION STATEMENT

The School of Pharmacy is dedicated to excellence in pharmacy-related education, research, and service including the provision of patient care. We prepare students with knowledge, skills, and values for careers in pharmacy practice and pharmaceutical sciences. Our programs promote intellectual growth, professionalism, and lifelong learning. Through the generation and dissemination of new knowledge and through scholarship and community service, the school contributes to improved individual and population health.

CREDITS: 4 SH

This is a 4 SH course meeting twice per week for 100 min per time. (A maximum of 40 qualified students can be accommodated in a given term.)

CLASS SCHEDULE AND ROOM ASSIGNMENT: TBD

The intent is to hold ~90-min class meetings twice weekly. Course is scheduled to meet Mon and Wed 4:25-6:05pm. The meetings will take place via Zoom on Mondays and in person (Ryder Hall 429) on Wednesdays for the duration of the semester (from 1/19/22 – 5/2/22).

PREREQUISITES

Open to freshmen and sophomore students. Enrollment is by permission of the instructor. Prerequisites: At least one semester Biology, Chemistry, Physics, Math (may be taken concurrently).

COURSE FACULTY

***Course Coordinator*:** Diomedes Logothetis, PhD
***Office Hours*:** Fridays 3:30-4:30pm (Optional: you will receive an MS Teams calendar invitation)

COURSE OUTCOMES

COURSE OBJECTIVES

At completion of the course, the student should be able to:

1. Identify and describe topics of personal interest in health science research.

2. Describe work of at least 3 laboratories that pursue research in these areas of interest.
3. Summarize and critique a published research article.
4. State a researchable unanswered question and design an innovative experiment to address it.
5. Make a scientific presentation to the class that creatively expresses experimental strategies to answer a significant health-related research question.

ABILITY BASED PROGRAMMATIC OUTCOMES COVERED IN THIS COURSE

At the completion of this course, the student should be able to meet the following Northeastern University, School of Pharmacy ability-based educational outcomes:

Ability-based outcome(s) taught and assessed in this course	Level taught (I, R or E)*	Assessment method(s)
1.1. Learner (Learner) - Develop, integrate, and apply knowledge from the foundational sciences (i.e., pharmaceutical, social/behavioral/administrative, and clinical sciences) to evaluate the scientific literature, explain drug action, solve therapeutic problems, and advance population health and patient-centered care.	E	• Written summaries of guest faculty presentations • Analysis of assigned research papers • Development of a research project proposal • In-class presentations
3.1. Problem Solving (Problem Solver) – Identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution	E	• Development of a research project proposal • Analysis of assigned research papers
3.2. Educator (Educator) – Educate all audiences by determining the most effective and enduring ways to impart information and assess understanding.	I	• Evaluation of in-class presentations
3.6. Communication (Communicator) – Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization.	I	• Evaluation of in-class presentations
4.1. Self-awareness (Self-aware) – Examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth.	I	• Written reflections

(I) Introductory: Outcome (or part of outcome) is presented at an introductory level in the course material. In the course design, there is minimal expectation that the student has prior knowledge or skill in the outcome area

(R) Reinforce: Outcome (or part of outcome) is incorporated into and reinforced throughout the course

(E) Emphasis: Outcome (in its entirety) is the primary focus of the course and in an integral part of the course competencies

COURSE MATERIALS/RESOURCES

Required:

- ❒ Kottler JA and Sharp L (2020) *Understanding Research* Cognella Academic Publishing, Second Edition. (ISBN-13: 9781516526253)
  Purchase paper/e-book directly from https://store.cognella.com/93393
- ❒ NU Canvas (http://canvas.northeastern.edu/) For technical assistance call NU Help Desk x4357

COURSE GRADING

There are four different ways of equivalent weight in which student performance is assessed. Quizzes: Students will be taking weekly quizzes to assess their understanding of the material from the text (Kottler and Sharp). Students ought to bring any issues with quiz questions to the attention of Dr. Logothetis in his Friday office hours. There will be 13 quizzes and the lowest score on a given quiz will be dropped from the average contributing to the final grade.

Assignments: There will be 20 assignments to match answering questions pertaining to the readings of the 20 original scientific papers that the students will read and discuss as part of this course.

Class Participation: Students will share in presenting and discussing figures from each paper. Starting with the first Paper, students will work in pairs (in alphabetical order by last name) to present the introduction/background and methods used in the paper being discussed and will also have all the figures from the paper in a power point presentation for everyone to take turns presenting. The students responsible for introducing the paper will also have a final slide summarizing the conclusions of the study and reviewing the abstract/summary/citations of the work.

Research project: Students will work with a faculty (either those who participate in the course or any other health science faculty who agrees to mentor the student) to design an experiment aiming to answer a scientific question that the student will present in the final three days of the course (10 min presentations with 5 min Q&A). Students will be highly encouraged to select faculty and experimental questions to address that they could be pursued in the following fall semester in PHSC 2100 – Lab Research Rotation.

Assignments need to be submitted on time on Canvas. Late assignments will lose half the credit

Class participation in discussion of scientific papers is required in order to receive credit

The lowest Quiz grade will be dropped from calculating the Quiz average grade. No credit will be given for late quizzes

The grade for the course will be determined as follows:

Activity	Weight
Weekly Quizzes	24%
Weekly homework assignments	26%
Class participation Includes original paper presentations and discussions	26%
Matching into a laboratory for a subsequent research experience and presentation of a planned research question	24%
TRACE Evaluation – BONUS point	1%

As mentioned above, students will not be limited to select labs only from those participating in the course but they will be required to develop a plan with the faculty member they select to work with and present it in class at the end of the course.

OVERALL COURSE %	GRADE
≥93.0%	A
90.0-92.9%	A-
87.0-89.9%	B+
83.0-86.9%	B
80.0-82.9%	B-
77.0-79.9%	C+
73.0-76.9%	C
70.0-72.9%	C-
67.0-69.9%	D+
63.0-66.9%	D
60.0-62.9%	D-
<60%	F

NU PATH ATTRIBUTES MET BY THIS COURSE

#2 Exploring Creative Expression and Innovation - Description and Learning Goals:

Students study and practice creative expression and innovation. They learn about traditions of creative expression and innovation in any of a number of modes (texts, image, sounds, design, etc.) and products (poems, paintings, prototypes, business plans, games, apps, medical devices and procedures, etc.) and develop their own creative processes and products as a means of seeing and experiencing the world in new ways and communicating those experiences to others.

Learning Goals:

1. Describe creative processes in one or more disciplines (e.g. art,

business, writing, science, engineering).

2. Generate an artifact (e.g., design, poem/essay, application, visualization, musical composition, product, prototype) through a creative process.

3. Evaluate experimentation, failure, and revision in the creation of innovative projects.

Justification:

1. Students read, analyze and discuss original literature as examples of creative works informing the scientific community of innovations in health sciences research. As part of this effort, students evaluate scientific evidence and methods presented. Students work with the course instructor to discuss and present a recent innovation to the group.
2. The course final assignment is to design a semester-long research project in a faculty's laboratory and in consultation with the faculty prepare a power point presentation of the project to the class. The presentation is required to follow the scientific process of formulating a hypothesis and employing methods utilized in the laboratory to design experiments to address the hypothesis. Knowledge in data acquisition and analysis methodologies in evaluating the hypothesis need to be demonstrated.
3. As part of learning to critically read the original literature the students have the opportunity to evaluate the experimental design within the paper and assess whether the authors succeeded or failed in addressing the important question they set out to answer. In the event that the results refute a prior held view students can also evaluate whether the authors provide the ground for pursuing a revised hypothesis based on their results.

COURSE POLICIES

EXPECTATIONS

Students are expected to be punctual and attend all classes for the entire class period. Professional classroom conduct is expected of all instructors, staff, and all students at all times to maintain an environment conducive to teaching and learning. Students are expected to behave in a manner that is not disruptive or disrespectful to any person's teaching or learning activities.

Quizzes need to be taken by midnight (11:59pm) on Sunday nights throughout the course. All homework assignments are due 5pm the day before the class meets as specified on the course syllabus, unless otherwise indicated. Unless expressly stated, all assignments are individual and work submitted is expected to be your own original work. Make-up assignments and assessments will be considered only in special circumstances by decision of the course coordinator.

COURSE EVALUATION

Constructive feedback is important to your instructors. We always strive to improve how we teach and deliver our courses. Based on student feedback, improvements can be made during the semester or the next time the course is offered. Improvements are not possible without your constructive feedback.

You have the opportunity to provide feedback about this course in a number of ways. The course instructor/coordinator always welcomes your direct comments about the course. Please feel free to contact them with your comments. At the *mid-point of the semester* (during Spring Break), your class representatives will ask you to complete a formative evaluation of the course. These comments will be shared with your instructors.

At the *end of the semester*, you will have the opportunity to complete course and instructor evaluations on **TRACE**. Northeastern University recognizes the value of evaluation of faculty and courses by students. Voluntary and confidential feedback from students regarding courses and faculty provide critical information for course and self-improvement. *These data also play an essential role in the annual faculty evaluation process*. The ability to provide constructive feedback is an essential skill for professionals. Northeastern University views that one of your responsibilities in your development, as a professional is to complete faculty and course evaluations. Northeastern University is constantly striving to improve its educational experiences for students. Please complete the faculty and course evaluations as directed.

POLICY REGARDING USE OF ELECTRONIC DEVICES

Cell phones must be in silent mode during class. Students who do not abide by this policy will be asked to leave the classroom (physical or virtual). Continued abuse of this policy will result in disciplinary procedures. Further, any noise-making device must be switched to vibrating or silent mode if available or turned off completely if this feature is not an option. For virtual classes you will be expected to always have your camera on and your microphone off unless you are speaking.

Calculators, tablets and laptop computers are permitted at all classes for class work. Audio recording may be permitted but require approval of the instructor.

POLICY ON GRADING (INCLUDING LATE SUBMISSIONS)

Students who have questions regarding assignment grades should submit a written statement explaining their concern to the course coordinator *within 7 days from the date that the assignment is returned.* A copy of the request should be retained by the student. Any requests submitted after one week from the date the assignment was due will not be considered. The decision of the course coordinator is final.

Late submissions may be accepted at the discretion of the course coordinator, but may be penalized by deducting half or full the credit depending on whether the late submission occurs before or after the assignment is discussed in class.

GROUP ASSIGNMENTS & CLASS PARTICIPATION

The class encourages students to engage in small group discussions of cases and questions related to the course content. The hope for these discussions is to enable students to examine issues more deeply and to develop critical thinking abilities. Students will analyze the issues and refine communications skills as they discuss the topic within their own group. However, during presentations, quizzes and assignments students are expected to submit their own work and not work produced by someone else.

ACADEMIC HONESTY

ACADEMIC HONESTY AND PROFESSIONALISM:
Any student found to be committing academic dishonesty and / or has an egregious violation of the School of Pharmacy's Code of Professional Conduct at any point in the course may receive an "F" for the course and NU OSCCR **will be** notified. The minimum sanction for academic dishonesty and / or an egregious violation associated with the assignment is a grade of 0%; a report of the incident will be filed with both the School of Pharmacy Dean's Office **and** NU OSCCR.

Northeastern University is committed to the principles of intellectual honesty and integrity. All members of the Northeastern University community share the responsibility to bring forward known acts of apparent academic dishonesty. If you witness an act of academic dishonesty in this course, you should report it to the course coordinator.

Students are expected to maintain the highest standards of honesty and integrity according to the Code of Student Conduct at Northeastern University. Please refer to detailed information regarding academic integrity policy (http://www.northeastern.edu/osccr/academichonesty.html) and the Code of Student Conduct (http://www.northeastern.edu/osccr/pdfs/2008-2009_Code.pdf). Students are expected to be familiar with the provisions of this code and conduct themselves accordingly. Each charge will be investigated and if the evidence is deemed sufficient and the student found responsible, appropriate sanctions will be implemented. There are different types of sanctions for students who violate the academic honesty and / or School of Pharmacy's Code of Professional Conduct policies – academic, professional, and administrative. These sanctions are independent of each other and students may be subject to one or more for the same offense.

- ***Academic sanctions*** are implemented by the instructor (e.g., grade of 0 for assignment, failure of the course, file academic misconduct form in Dean's office, etc).
- ***Professional sanctions*** are implemented by the Office of the Dean within the School of Pharmacy (e.g. grade of 0 for assignment, failure of the course, professional development assignment, dismissal from the pharmacy program, etc)
- ***Administrative sanctions*** are those implemented by OSCCR and the NU Student Judicial Hearing Board (e.g., probation, deferred suspension, expulsion, etc).

If you have any questions related to these policies, please contact your professor prior to submitting work for evaluation.

STUDENTS WITH SPECIAL NEEDS:

Students with special needs (e.g., physical disabilities, hearing impaired) are encouraged to contact the Northeastern University Disability Resource Center (DRC) to register and request services and/or accommodations. Students must notify the coordinator at the beginning of the semester if they plan to use DRC services throughout the course. Contact information for the DRC, located at 20 Dodge Hall, is listed on their web link:

http://www.northeastern.edu/drc/ or by calling: (617) 373-2675, TTY: (617) 373-2730, Fax: (617) 373-7800.

INSTRUCTIONAL METHODS

This seminar course will address the nature of research in the fields of Health Science and explore areas and laboratories at Northeastern University that would offer undergraduates research opportunities. Multiple methods will be used to accomplish these goals:

- Presentations by guest lab heads regarding research from their labs and answer specific questions
- Reading, presentation and discussion of current scientific papers
- Viewing and discussion of "Naturally Obsessed", a 2009 documentary film.
- Review faculty credentials and match to student preferences

Class		*Date*	*Faculty*	*Topic (Class)*	*To prepare for next class*
W1-0	M	1/17		NO CLASS (Martin Luther King)	
W1-1	W	1/19	Logothetis	Introduction/Overview of the Course/Intro of Paper 1: *Logothetis et al., 1987*	Read *Chapter* 1; Read *Paper 1: Logothetis et al., 1987*
W2-2	M	1/24	Logothetis	Logothetis Lab: Research Program Start Discussion: Paper 1	Watch *Film - Naturally Obsessed;* Re-read Paper 1 Assignment 1: *Answer questions on* Paper 1
W2-3	W	1/26	Logothetis	End Discussion: Paper 1 - Logothetis et al., 1987; Learning to read a CV & write a cover letter; Film discussion	Read *Chapter 2*; Read *Paper 2:* Assignment 2: *Answer questions on Paper 2*
W3-4	M	1/31	Plant	Plant Lab: Research Program presentation Discussion: *Paper 2* -	Read Paper 3: Assignment 3: *Answer questions on Paper 3*
W3-5	W	2/2	Hatfield	Hatfield Lab: Research Program presentation Discussion: Paper 3:	Read *Chapter 3*; Read Paper 4: _____; Prepare Cover Letter and Resume; Assignment 4: *Answer questions on Paper 4*
W4-6	M	2/7	Agar	Agar Lab: Research Program presentation Discussion: Paper 4	Read Paper 5: Assignment 5: *Answer questions on* Paper 5
W4-7	W	2/9	Ferris	Ferris Lab 5: Research Program presentation Discussion: Paper 5	Read *Chapter 4;* Read Paper 6 Assignment 6: *Answer questions on Paper 6*
W5-8	M	2/14	Manetsch	Manetsch Lab: Research Program presentation Discussion: Paper 6	Read Paper 7: Assignment 7: *Answer questions on* Paper 7
W5-9	W	2/16	Yano	Yano Lab: Research Program presentation Discussion: Paper 7	Read *Chapter 5; ;* Read Paper 8 Assignment 8: *Answer questions on Paper 8*
W6-10	M	2/21		NO CLASS (President's Day)	
W6-11	W	2/23	Cui	Cui Lab: Research Program presentation Discussion: Paper 8	Read *Chapter 6;* Read Paper 9: Assignment 9: *Answer questions on* Paper 9
W7-12	M	2/28	Thakur	Thakur Lab: Research Program presentation Discussion: Paper 9	Read Paper 10: Assignment 10: *Answer questions on* Paper 10
W7-13	W	3/2	Khrapko	Khrapko Lab: Research Program presentation Discussion: Paper 10	Read *Chapter 7*; Read Paper 11: Assignment 11: *Answer questions on Paper 11*
W8-14	M	3/7	Lykourinou	Lykourinou Lab: Research Program presentation Discussion: Paper 11	Read Paper 12: Assignment 12: *Answer questions on* Paper 12

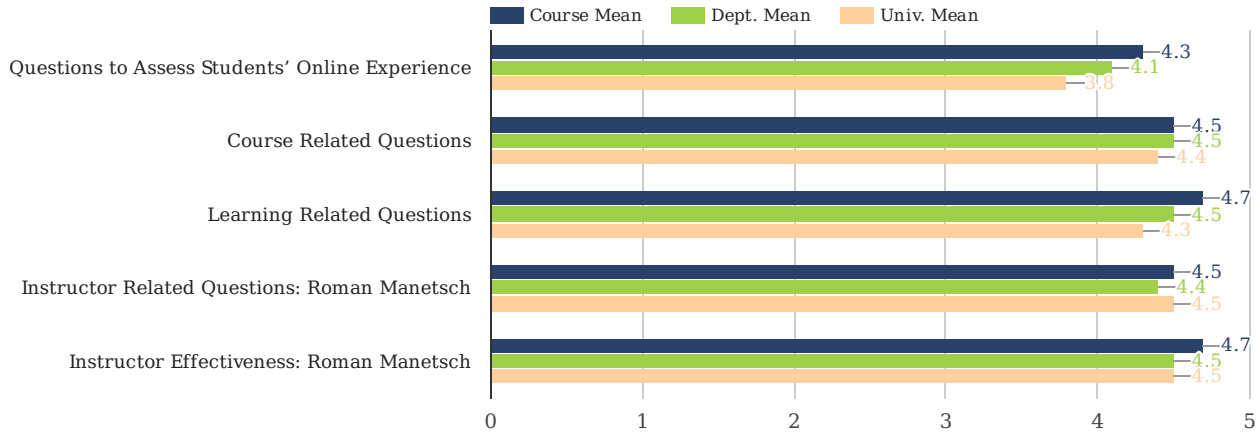
W8-15	W	3/9	Loring	Loring Lab: Research Program presentation Discussion: Paper 12	Read *Chapter 8*; Read Paper 13 Assignment 13: *Answer questions on* Paper 13
W9-16	M	3/14		SPRING BREAK	
W9-17	W	3/16		SPRING BREAK	
W10-18	M	3/21	Konry	Konry Lab: Research Program presentation Discussion: Paper 13	Read Paper 14: Assignment 14: *Answer questions on Paper 14*
W10-19	W	3/23	Bronich	Bronich Lab: Research Program presentation Discussion: Paper 14	Read *Chapter 9*; Read Paper 15: Assignment 15: *Answer questions on Paper 15*
W11-20	M	3/28	Monaghan	Monaghan Lab: Research Program presentation Discussion: Paper 15	Read Paper 16: Assignment 16: *Answer questions on Paper 16*
W11-21	W	3/30	Ivanov	Ivanov Lab: Research Program presentation Discussion: Paper 16	Read *Chapter 10*; Read Paper 17 Assignment 17: *Answer questions on Paper 17*
W12-22	M	4/4	Asthagiri	Asthagiri Lab: Research Program presentation Discussion: Paper 17	Read Paper 18: Assignment 18: *Answer questions on Paper 18*
W12-23	W	4/6	Koppes	Koppes Lab: Research Program presentation Discussion: Paper 18 (*perhaps Zoom*)	Read *Chapter 11*; Read Paper 19 Assignment 19: *Answer questions on Paper 19*
W13-24	M	4/11	Bencherif	Bencherif Lab: Research Program presentation Discussion: Paper 19	Read Paper 20: Assignment 20: *Answer questions on Paper 20*
W13-25	W	4/13	Milane	Milane Lab: Research Program presentation Discussion: Paper 20	Read *Chapter 12* Prepare and submit your Power Point Presentations
W14-26	M	4/18		NO CLASS (Patriot's Day)	
W14-27	W	4/20	Students	Student Presentations of Planned Projects	Read *Chapter 13* 6 students (Each: 10 min presentations, 5 min Q & A)
W15-28	M	4/25	Students	Student Presentations of Planned Projects	6 students (Each: 10 min presentations, 5 min Q & A)
W15-29	W	4/27	Students	Student Presentations of Planned Project	6 students (Each: 10 min presentations, 5 min Q & A)
W16-30	M	5/2	Students	Student Presentations of Planned Project	5 students (Each: 10 min presentations, 5 min Q & A)

Intro to Health Sci Research (Spring 202230)

Instructor: **Manetsch, Roman**
Section: **01**
Course Title: **Intro to Health Sci Research**
Course ID: **32879**
Objectives:

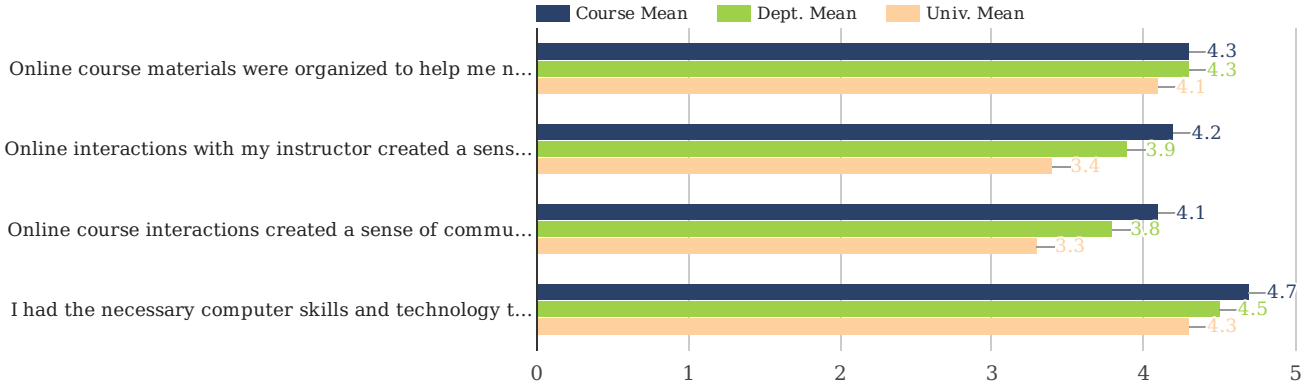
Enrollment: **23**
Responses Incl Declines: **18**
Declines: **0**

Category Summary



Category	Number of Responses	Response Rate	Mean	Dept. Mean	Univ. Mean	Median	Dept. Median	Univ. Median	STDEV
Questions to Assess Students' Online Experience	72	78.3%	4.3	4.1	3.8	5.0	5.0	4.0	0.9
Course Related Questions	36	78.3%	4.5	4.5	4.4	5.0	5.0	5.0	0.8
Learning Related Questions	72	78.3%	4.7	4.5	4.3	5.0	5.0	5.0	0.5
Instructor Related Questions: Roman Manetsch	88	47.8%	4.5	4.4	4.5	5.0	5.0	5.0	0.7
Instructor Effectiveness: Roman Manetsch	11	47.8%	4.7	4.5	4.5	5.0	5.0	5.0	0.6

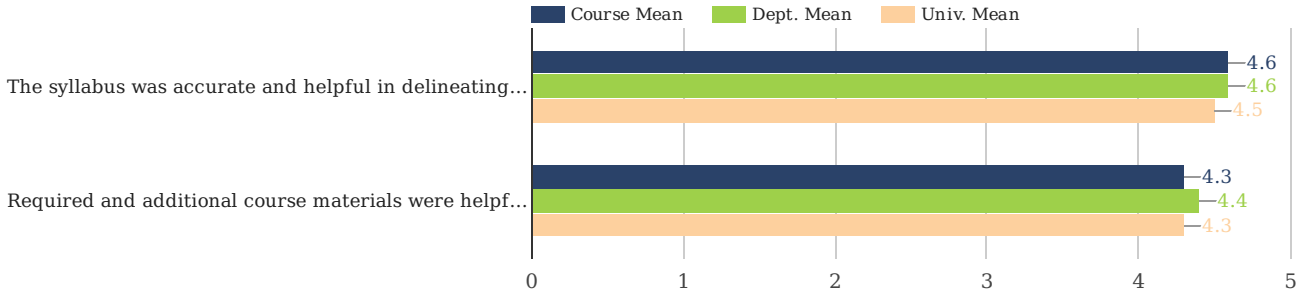
Questions to Assess Students' Online Experience



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
Online course materials were organized to help me navigate through the course week by week.	18	78%	4.3	4.3	4.1	5.0	5.0	5.0
Online interactions with my instructor created a sense of connection in the virtual classroom.	18	78%	4.2	3.9	3.4	4.0	4.0	4.0
Online course interactions created a sense of community and connection to my classmates.	18	78%	4.1	3.8	3.3	4.5	4.0	4.0
I had the necessary computer skills and technology to successfully complete the course.	18	78%	4.7	4.5	4.3	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree; 0:N/A;

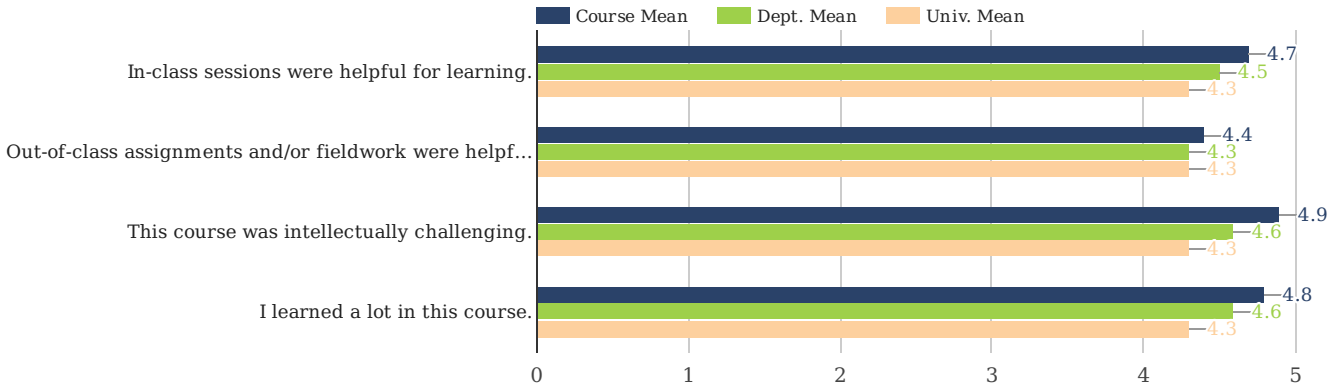
Course Related Questions



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
The syllabus was accurate and helpful in delineating expectations and course outcomes.	18	78%	4.6	4.6	4.5	5.0	5.0	5.0
Required and additional course materials were helpful in achieving course outcomes.	18	78%	4.3	4.4	4.3	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

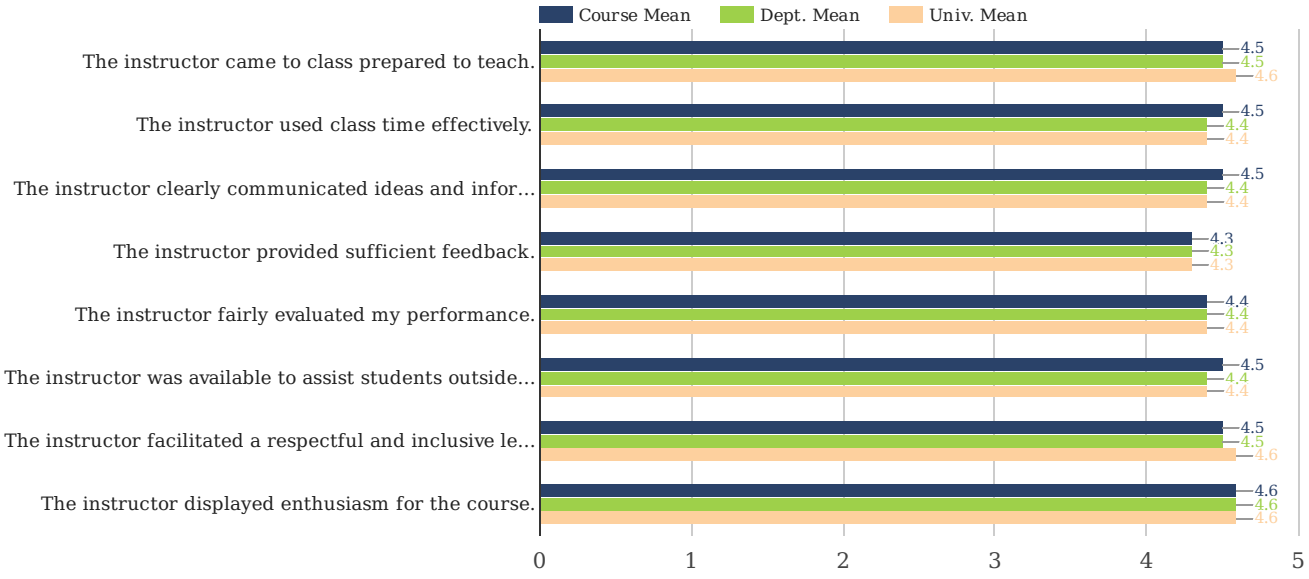
Learning Related Questions



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
In-class sessions were helpful for learning.	18	78%	4.7	4.5	4.3	5.0	5.0	5.0
Out-of-class assignments and/or fieldwork were helpful for learning.	18	78%	4.4	4.3	4.3	5.0	5.0	4.0
This course was intellectually challenging.	18	78%	4.9	4.6	4.3	5.0	5.0	5.0
I learned a lot in this course.	18	78%	4.8	4.6	4.3	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

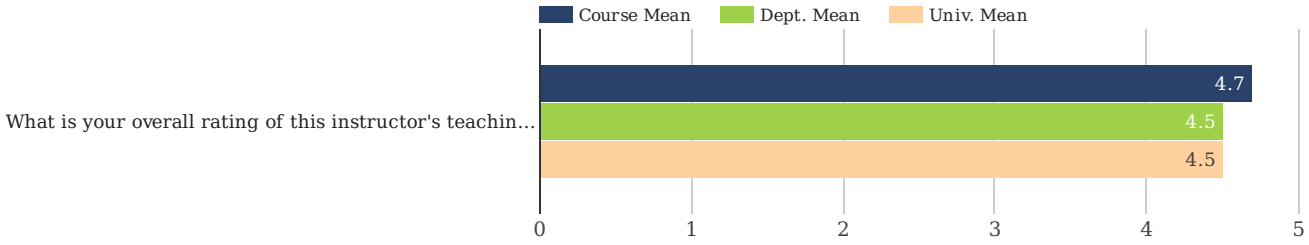
Instructor Related Questions: Roman Manetsch



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
The instructor came to class prepared to teach.	11	47%	4.5	4.5	4.6	5.0	5.0	5.0
The instructor used class time effectively.	11	47%	4.5	4.4	4.4	5.0	5.0	5.0
The instructor clearly communicated ideas and information.	11	47%	4.5	4.4	4.4	5.0	5.0	5.0
The instructor provided sufficient feedback.	11	47%	4.3	4.3	4.3	4.0	5.0	5.0
The instructor fairly evaluated my performance.	11	47%	4.4	4.4	4.4	5.0	5.0	5.0
The instructor was available to assist students outside of class.	11	47%	4.5	4.4	4.4	5.0	5.0	5.0
The instructor facilitated a respectful and inclusive learning environment.	11	47%	4.5	4.5	4.6	5.0	5.0	5.0
The instructor displayed enthusiasm for the course.	11	47%	4.6	4.6	4.6	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

Instructor Effectiveness: Roman Manetsch

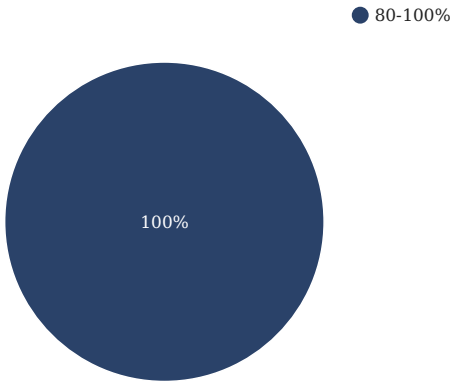


Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
What is your overall rating of this instructor's teaching effectiveness?	11	47%	4.7	4.5	4.5	5.0	5.0	5.0

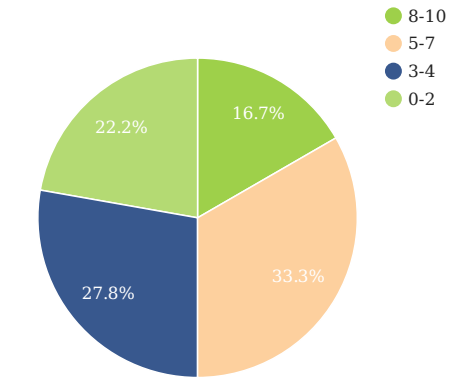
Note: 5:Almost Always Effective; 4:Usually Effective; 3:Sometimes Effective; 2:Rarely Effective; 1:Never Effective;

Demographics

How often did you attend this class both in-person and remotely?



The number of hours per week I devoted to this course outside scheduled class meeting times.



Intro to Health Sci Research (Spring 202230)

Instructor: **Manetsch, Roman**
Subject: **PHSC**
Catalog & Section: **2650 01**
Course ID: **32879**
Objectives:

Enrollment: **23**
Responses Incl Declines: **18**
Declines: **0**

Instructor Related Questions: Roman Manetsch (10 comments)

Q: What were the strengths of this course and/or this instructor?

1	Gave a really well put together and informative presentation!
2	engaged students, and answered questions effectively.
3	Provided clear instructors and explain in detail the information within his lab. Ensured that students were well versed in lab
4	Not primary instructor

Q: What could the instructor do to make this course better?

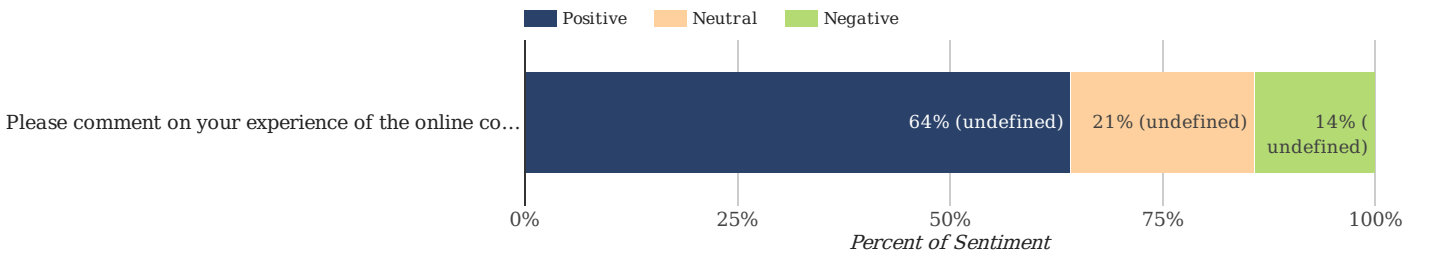
1	N/A
2	sometimes this course felt so overwhelming with the amount of papers we had to read each week and the transition time from Monday to Wednesday class was too short of a period since we had to read and submit questions to a paper in a day. It was good that some of my classmates and I worked together, but I cannot imagine those who did not have classmates that they know to work with. I suggest that the professor encourages group work and connect the students to each other more.
3	Not primary instructor

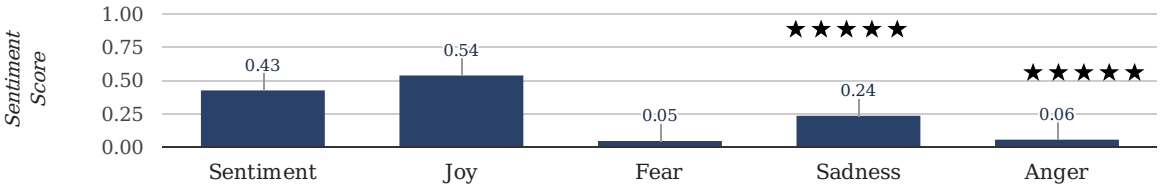
Q: Please expand on the instructor's strengths and/or areas for improvement in facilitating inclusive learning.

1	N/A
2	sometimes this course felt so overwhelming with the amount of papers we had to read each week and the transition time from Monday to Wednesday class was too short of a period since we had to read and submit questions to a paper in a day. It was good that some of my classmates and I worked together, but I cannot imagine those who did not have classmates that they know to work with. I suggest that the professor encourages group work and connect the students to each other more.
3	Not primary instructor

Questions to Assess Students' Online Experience (14 comments)

Q: Please comment on your experience of the online course environment in the open-ended text box.





★☆☆☆

5	The recordings made it helpful to rewatch if I missed anything during class. ★★★★★
6	It was good. Very involve, requirement to keep our cameras on ★★★★★
7	some of the course assignments were not in the same spot as the others on some days and some coursework was disorganized ★☆☆☆☆
8	Everyone has good opportunities to participate in the class activities and discuss well. ★★★★★
9	Having cameras on for online classes made it easier to engage in discussions. ★★★☆☆
10	I thought the online course was convenient, but I definitely felt more isolated from my classmates/the professors that visited. ★★★★☆
11	The online course environment was informative and helpful to the student's understanding of the subject. ★★★★★
12	The online experience was fine although this course was hybrid. ★★★☆☆
13	It was very well put together, although Canvas was unorganized sometimes. ★★★☆☆
14	I enjoyed this class this semester. Coming into the course only knowing the name of the class, I thought it was going to be very different and much more mundane than it actually was. The format of listening to professors present their research is engaging and interesting. Also I very much enjoyed the hybrid style as the classes were long and late in the day so having it once a week online was a nice break. ★★★★★

Student Self-Assessment of their Effort to Achieve Course Outcomes (16 comments)

Q: What I could have done to make this course better for myself.

1	I could have participated more in terms of explaining more paper figures.
2	Ask more questions regarding the papers
3	nothing. i work hard in this course and was able to complete all the assignments to the best of my ability.
4	Read the articles across multiple days to give myself more time to understand the material being presented.
5	Time management
6	I wish I had a stronger, more thorough background information
7	spent more time reading through the papers and getting better understanding of what the papers were about rather than just worrying about getting questions done
8	Spend more time on paper reading and researching. Join the discussions more.
9	Having questions prepared for instructors beforehand.
10	I could have dedicated more time to reading the papers/asking questions to Professors about their labs.
11	I could have read through the papers more in advance to increase my inferential understanding.
12	I could have approached reading the differing papers with more enthusiasm rather than resenting them
13	Started the research papers and questions earlier.
14	I could have read each paper more thoroughly than I did. I read them all and enjoyed them, but there were certainly some papers where I understand a limited amount of the information.
15	Participate more in class discussions when in person
16	One way I could have made this class better for myself would have been to participate more often and utilize office hours more.

Northeastern University
Bouvé College of Health Sciences
School of Pharmacy

PHSC 5360 Anti-Infectives
Summer 2022

COURSE FACULTY
Name, Role, and Contact Info
COURSE COORDINATOR: **Roman Manetsch**, Ph.D. Associate Professor Department of Chemistry and Chemical Biology and Department of Pharmaceutical Sciences Northeastern University r.manetsch@northeastern.edu COURSE FACULTY: **Karrine Brade**, PharmD, BCPS, BCIDP Clinical Specialist Lead, Antimicrobial Stewardship/Infectious Diseases Director, PGY2 ID Pharmacy Residency Program Boston Medical Center Karrine.Brade@bmc.org **Christopher McCoy**, PharmD, BCPS- AQ ID, BCIDP Associate Director, Antimicrobial Stewardship PGY2 Infectious Diseases Residency Program Director Beth Israel Deaconess Medical Center cmccoy@bidmc.harvard.edu **Nikolaos S. Soukos**, D.D.S., Ph.D. Department of Physics and Biology Dana Research Center Northeastern University n.soukos@northeastern.edu **Ganesh Thakur**, Ph.D. Associate Professor Department of Pharmaceutical Sciences Northeastern University g.thakur@northeastern.edu TEACHING ASSISTANTS: **Lisa Fleischer**, fleischer.l@northeastern.edu **Maria Gerasi**, gerasi.m@northeastern.edu

Northeastern University
Bouvé College of Health Sciences
School of Pharmacy

COURSE INFORMATION	
DESCRIPTION:	This course reviews the structure and physiology of bacteria, fungi, and viruses, and surveys significant organisms of medical importance. Once a foundation of knowledge of the microorganisms that cause disease is established, specific antibiotic, antifungal and antiviral agents and other classes of agents will be introduced. Concepts of pharmacology, medicinal chemistry, pharmacokinetics, antimicrobial resistance, pharmacodynamics of antimicrobial agents, and spectra of activity will also be discussed.
PREREQUISITES:	Successful completion of PHSC 4502 Pharmacology 2
CO-REQUISITES:	None
CREDIT HOURS:	4 semester hours
CLASS SCHEDULE AND ROOM ASSIGNMENT:	Monday and Wednesdays, 8:30 am to 10:15 am EDT at Room 101 in Churchill Hall / NUflex
MISSION STATEMENT:	The School of Pharmacy is dedicated to excellence in pharmacy-related education, research, and service including the provision of patient care. We prepare students with knowledge, skills, and values for careers in pharmacy practice and pharmaceutical sciences. Our programs promote intellectual growth, professionalism, and lifelong learning. Through the generation and dissemination of new knowledge and through scholarship and community service, the school contributes to improved individual and population health.

COURSE OUTCOMES

OBJECTIVES:
Upon completion of the course, the student should be able to:

- Describe the structure and physiology of medically relevant bacteria
- Explain the Gram stain, morphology (i.e. – cocci, bacillus, etc), and growth conditions (i.e. – aerobic, anaerobic) for the following genera of bacteria:
  Staphylococcus, Streptococcus, Enterococcus, Peptostreptococcus, Bacillus, Corynebacterium, Listeria, Clostridium (Clostridioides), Neisseria, Acinetobacter, Citrobacter, Enterobacter, Escherichia, Haemophilus, Klebsiella, Moraxella, Proteus, Pseudomonas, Salmonella, Serratia, Stenotrophomonas, Yersinia, Pasteurella, Francisella, Shigella, Vibrio, Bacteroides, Borrelia,

Rickettsia, Campylobacter, Helicobacter, Treponema, Mycobacterium, Legionella, Chlamydia, Chlamydophila, and *Mycoplasma*

- Describe the structure and physiology of medically relevant fungi
- Summarize the difference between yeasts and molds
- Identify common yeasts and molds including but not limited to: *Candida, Pneumocystis, Penicillium, Histoplasma, Cryptococcus, Blastomyces, Coccidioides, Aspergillus*, and *Mucor*
- Explain the structure and life cycle (including targets of anti-virals) of the following viruses: Influenza A and B, Hepatitis A, B, and C, Herpes Simplex Virus, Human Immunodeficiency Virus, Cytomegalovirus, Rotavirus, and Varicella Zoster Virus.
- Differentiate and describe the laboratory methods used in microbial diagnosis and antimicrobial susceptibility testing, identifying the clinical application, advantages, and disadvantages of each
- Explain the medicinal chemistry of selected anti-infective agents and discuss structure-activity relationship within each class of drugs
- Discuss drug-drug interactions with anti-infective agents
- Describe the major routes of elimination/metabolism of all agents/classes presented in the course.
- Explain the mechanism of action, general spectra of activity, common and severe adverse events, and potential drug interactions for the following antibiotics or classes:
    a) Penicillin derivatives
    b) Cephalosporins
    c) Carbapenems and monobactams (aztreonam)
    d) Fluoroquinolones
    e) Aminoglycosides
    f) Polymyxins
    g) Vancomycin, linezolid, tedizolid, daptomycin, telavancin, dalbavancin, and oritavancin
    h) Macrolides
    i) Chloramphenicol
    j) Trimethoprim/sulfamethoxazole
    k) Tetracyclines, tigecycline
    l) Metronidazole
    m) Clindamycin
    n) Antitubercular Agents

- Differentiate the mechanism of action, general spectra of activity, common and severe adverse events, and potential drug interactions for the following antifungal agents or classes:
    a) Amphotericin B
    b) Flucytosine
    c) Azole antifungals

d) Echinocandins

- Describe the mechanism of action, activity, common and severe adverse events, and potential for drug interaction for the following antiviral agents or classes:
  a) Adamantanes
  b) Neuraminidase inhibitors
  c) Ribavirin
  d) Agents for management of Hepatitis B and C
  e) Antiherpes nucleoside analogs
  f) Other antiherpetic agents: foscarnet, cidofovir
  g) CCR5 inhibitors
  h) Fusion inhibitors
  i) Nucleoside reverse transcriptase inhibitors
  j) Non-nucleoside reverse transcriptase inhibitors
  k) Integration strand transfer inhibitors (INSTIS-Integrase inhibitors)
  l) Protease inhibitors
  m) Tat inhibitors

- Explain major mechanisms of antimicrobial resistance of clinical importance

ABILITY-BASED PROGRAMMATIC OUTCOMES (ABOs) COVERED IN THIS COURSE:

Upon completion of this course, the student should be able to meet the following Northeastern University, School of Pharmacy ability-based educational outcomes:

- **Introduced (I):** Degree of learning intended to introduce basic knowledge, skills, attitudes (KSAs) that support the learning outcome. The learner is often exposed to material for the first time and might require explicit guidance for application.
- **Reinforced (R):** Degree of learning intended to strengthen and support the development of KSAs relevant to the learning outcome. This will further develop the skills necessary for the future optimal achievement of the learning outcome. Students will gain a full understanding of the KSA but still might require assistance in more challenging applications.
- **Proficient (P):** Degree of learning intended to show achievement of the outcome. This involves the integration of all KSAs necessary for the complete accomplishment of the outcome. Students are expected to have a full understanding of the material and can apply it independently.

Outcomes taught and assessed in this course:	Teaching Level (I, R or P)	Assessment method(s)

Learner (Learner) - Develop, integrate, and apply knowledge from the foundational sciences (i.e., social/behavioral/administrative, pharmaceutical, and clinical sciences) to evaluate the scientific literature, explain drug action, solve therapeutic problems, and advance population health and patient-centered care.	P	• 2 Midterm exams • Final exam • Quizzes
Problem Solving (Problem Solver) – Identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution.	I	• 2 Midterm exams • Final exam
Professionalism (Professional) - Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers, and society.	R	Expected but not formally evaluated

INTERPROFESSIONAL EDUCATION COMPETENCY OUTCOMES IN THIS COURSE:
Interprofessional education is not a focus of this course.

INSTRUCTIONAL METHOD(S):	Traditional lecture with slide presentations accessible in Canvas; recorded lectures

COURSE MATERIALS/RESOURCES

REQUIRED:	1) Antibiotics Simplified, Current (4th) edition, by Jason C. Gallagher and Conan MacDougall. Available in paperback or Kindle electronic edition. 2) Katzung BG, Masters SB, Trevor AJ. Basic and Clinical Pharmacology – current edition (as required in previous pharmacology/medicinal chemistry courses) 3) Foye's Principles of Medicinal Chemistry – current edition (as required in previous pharmacology/medicinal chemistry courses) 4) Zoom (https://digitalresilience.northeastern.edu/2020/03/17/introducing-zoom-conferencing-solution-teaching-learning/) 5) A computer for taking quizzes and exams (iPad or other tablets cannot be used). Quizzes are 10 minutes in length. Most quizzes and exams will be administered using ExamSoft. More information will be shared as the class begins.

SUGGESTED:	1) Marjorie Kelly Cowan. Microbiology: Systems Approach – 4th edition. 2) The Sanford guide to Antimicrobial Therapy, Current edition. Go to http://www.sanfordguide.com/ to see all formats available. You will likely need this for APPEs, so choose the format most convenient for you (Mobile vs. small pocket guide, etc)
RECOMMENDED:	SOP specific library webpage: https://subjectguides.lib.neu.edu/pharmacy

COURSE ASSESSMENT:

The following displays the various course elements and their relative weights, from which the letter grade will be calculated.

GRADING COMPONENT:	% OF OVERALL GRADE
2 Reflection papers from 2 video presentations (see Canvas for grading rubric)	5 %
5 Quizzes (lowest grade dropped if TRACE submitted; screenshot of TRACE completion required)	20 %
2 Mid-semester exams (25 % each)	50 %
Final exam	25 %
Total	100 %

Exams and quizzes will be administered in the classroom. The exam duration will be 50 minutes or shorter, whereas the quiz duration will be 15 minutes or shorter. Exam and quiz results will be available after the entire class completes it and the results have been reviewed. These measures will be in place to ensure quiz security. *You are expected to complete the exams and quizzes on your own and abide by academic honesty standards as addressed above and below*. Students are required to have a laptop or desktop computer for taking exams and quizzes (iPad or other tables cannot be used). Students are responsible for contacting ExamSoft support (+1-866-429-8889) to resolve any computer related issues and to keep the course coordinator updated, including providing with the ticket number, if applicable.

All exams will be administered via Examplify/ExamSoft. Exams will cover information from any materials or information presented during the semester. Exams will not be "open note" meaning that students may not use any of their course materials to complete the exam. Each student must complete the exam on their own, **absolutely no collaboration is allowed on exams.** *Important:* Exam and quiz codes will be sent to students approximately 5 minutes in advance. Students will have up to 65 minutes to upload an exam or up to 20 minutes to upload a quiz. Failure to upload the exam or quiz by the specified time will incur a 15% penalty on the exam or quiz.

A re-challenge exam (i.e., an exam given after the end of the course for students who do not pass) will not be administered in this course. It is the student's responsibility to seek assistance from the course instructor(s) during the semester if he or she is having difficulty with course material or examinations.

Two reflection papers are due by May 18th, 10:15 AM EDT, and May 24th, 10:15 AM EDT. Directions how these reflection papers may be prepared are posted on Canvas under Course Material. The reflection papers must be submitted via Canvas.

OVERALL COURSE %	GRADE
≥93.0%	A
90.0-92.9%	A-
87.0-89.9%	B+
83.0-86.9%	B
80.0-82.9%	B-
77.0-79.9%	C+
73.0-76.9%	C
70.0-72.9%	C-
67.0-69.9%	D+
63.0-66.9%	D
60.0-62.9%	D-
<60%	F

The overall course performance will be calculated from the total. *Important:* To pass this course, you must earn: (1) An overall course grade of 73.0 % (letter grade C) or better; and (2) A grade of 73.0 % or higher on at least one of the 3 major exams. Grades will be rounded to the tenths place, shown in the grading scheme.

COURSE POLICIES:	*COURSE POLICIES AND EXPECTATIONS:* Students are expected to view all lectures for the entire lecture period. Professional classroom conduct is expected of all instructors, staff, and all students at all times to maintain an environment conducive to teaching and learning. Students are expected to behave in a manner that is not disruptive or disrespectful to any person's teaching or learning activities. *POLICY ON GRADING (INCLUDING LATE SUBMISSIONS):* Students who have questions regarding assessment grades should submit a written statement explaining their concern to the course coordinator *within 7 days from the date that the assessment is released to the student.* A copy of the request should be retained by the student. Any requests submitted after one week from the date the assessment was due will not be considered. The decision of the course coordinator is final.

	RECORDING OF LECTURES: Course instructors will record lectures using Zoom. Recorded lectures will be made available to students on Canvas.
SYLLABUS DISCLAIMER:	Any changes to the syllabus will be made at the discretion of the course instructor. It is the responsibility of the student to stay informed of any such changes.
EXPECTATIONS:	Students are expected to be punctual and attend all classes for the entire class period. Professional classroom conduct is expected of all instructors, staff, and all students at all times to maintain an environment conducive to teaching and learning. Students are expected to behave in a manner that is not disruptive or disrespectful to any person's teaching or learning activities. All assignments are due at the end of class on the day listed in course syllabus unless otherwise indicated. Unless expressly stated, all assignments are individual, and work submitted is expected to be your own original work.
CLASS PARTICIPATION:	This is a participatory course, and each student is expected to be an active participant in the work that occurs. Student learning in this course is directly related to the efforts made in learning the course material. Attending class and arriving to class promptly is expected of each student (and shows respect for fellow students). Students will be called on in class, and each student can expect to be called on unexpectedly several times during the semester.
GROUP ASSIGNMENTS:	The class will provide opportunities for students to engage in small group discussions of cases and questions related to the course content. The purpose of these discussions is to enable students to examine issues more deeply and to develop critical thinking abilities. Students will analyze the issues and refine communications skills as they discuss the topic within their own group. Students will need to sit with their group and discuss the given questions.
COURSE EVALUATION/ STUDENT FEEDBACK:	Constructive feedback is important to your instructors. We always strive to improve how we teach and deliver our courses. Based on student feedback, improvements can be made during the semester or the next time the course is offered. Improvements are not possible without your constructive feedback.

	You have the opportunity to provide feedback about this course in a number of ways. The course instructor/coordinator always welcomes your direct comments about the course. Please feel free to contact them with your comments. At the mid-point of the semester, your class representatives will ask you to complete a formative evaluation of the course. These comments will be shared with your instructors. At the end of the semester, the Office of the Registrar, in collaboration with the Office of the Provost, administers the TRACE (Teacher Rating and Course Evaluation) for undergraduate and graduate courses at Northeastern University. Northeastern University recognizes the value of evaluation of faculty and courses by students. Voluntary and confidential feedback from students regarding courses and faculty provide critical information for course and self-improvement to improve its educational experiences for students. These data also play an essential role in the annual faculty evaluation process. Given the public nature of student comments made through TRACE and their intended use to enhance teaching, students are asked to please be thoughtful, professional and considerate with responses. The ability to provide constructive feedback is an essential skill for professionals. Northeastern University views that one of your responsibilities in your development, as a professional is to complete faculty and course evaluations. Students may also use the Self-Authored Integrated Learning (SAIL) platform to indicate skills and abilities learned during the course. Visit: https://sail.northeastern.edu/ for more information.
USE OF ELECTRONIC DEVICES:	Cell phones must be in silent mode during class. Students who do not abide by this policy will be asked to leave the classroom. Continued abuse of this policy will result in disciplinary procedures. Further, any noise-making device must be switched to vibrating or silent mode if available or turned off completely if this feature is not an option. Calculators, tablets and laptop computers are permitted at all classes for class work. Audio recording may be permitted but requires approval of the instructor.
POLICY ON GRADING (INCLUDING LATE SUBMISSIONS):	Students who have questions regarding assignment grades should submit a written statement explaining their concern to the course coordinator within 7 days from the date that the assignment is returned. A copy of the request should be retained by the student. Any

	requests submitted after one week from the date the assignment was due will not be considered. The decision of the course coordinator is final. Late submissions may be accepted at the discretion of the course coordinator but may be penalized by deducting one letter grade per business day late.
POLICY ON MAKE-UP WORK:	Make-up assignments and assessments will be considered only in special circumstances by decision of the course coordinator.
TEACHING TECHNOLOGY	
POLL EVERYWHERE:	• You must bring a device that will allow you to participate (e.g. smartphone, laptop, tablet) to every class. • Learn more at: https://web.northeastern.edu/nle/tools/poll-everywhere/
ZOOM:	Course instructors will attempt to capture lectures using Zoom. Recorded lectures can be used to supplement your learning in this class. Students are encouraged to attend class regardless of whether recordings are available. Zoom software does not always work properly and not all lectures are amenable to recording depending on instructional methodologies used; therefore, students should take this into account – regular classroom attendance is essential for your success.
ELECTRONIC TESTING:	Students are required to have a laptop computer for taking quizzes and exams (iPad or other tablets CANNOT be used). All examinations in the course are administered via ExamSoft. More information will be shared as the class begins. Students are allowed 2 weeks to resolve any computer problems during which paper quiz/ test will be provided. Beyond the 2 weeks, a grade penalty of 25% will be applied to each assessment not completed via the ExamSoft platform. Students are responsible for contacting ExamSoft support (866) 429-8889 to resolve their computer related issues and provide course coordinator with the ticket number, if applicable.
ACADEMIC HONESTY:	ACADEMIC HONESTY AND PROFESSIONALISM:

	As health professionals-in-training, the highest level of ethical behavior is expected of all students. Plagiarism, cheating, and any form of unauthorized collaboration will not be tolerated and will be handled in accordance with University policies including the Academic Honesty and Integrity Policy. Requirements can be found at: http://www.northeastern.edu/osccr/academic-integrity-policy/ Any student found to be committing academic dishonesty and / or has an egregious violation of the School of Pharmacy's Code of Professional Conduct at any point in the course may receive an "F" for the course and NU OSCCR will be notified. The minimum sanction for academic dishonesty and / or an egregious violation associated with the assignment is a grade of 0%; a report of the incident will be filed with both the School of Pharmacy Dean's Office and NU OSCCR. Northeastern University is committed to the principles of intellectual honesty and integrity. All members of the Northeastern University community share the responsibility to bring forward known acts of apparent academic dishonesty. If you witness an act of academic dishonesty in this course, you should report it to the course coordinator. Students are expected to maintain the highest standards of honesty and integrity according to the Code of Student Conduct at Northeastern University. Please refer to detailed information regarding academic integrity policy (http://www.northeastern.edu/osccr/academichonesty.html) and the Code of Student Conduct (http://www.northeastern.edu/osccr/pdfs/2008-2009_Code.pdf). Students are expected to be familiar with the provisions of this code and conduct themselves accordingly. Each charge will be investigated and if the evidence is deemed sufficient and the student found responsible, appropriate sanctions will be implemented. There are different types of sanctions for students who violate the academic honesty and / or School of Pharmacy's Code of Professional Conduct policies – academic, professional, and administrative. These sanctions are independent of each other and students may be subject to one or more for the same offense.

	- Academic sanctions are implemented by the instructor (e.g., grade of 0 for assignment, failure of the course, file academic misconduct form in Dean's office, etc). - Professional sanctions are implemented by the Office of the Dean within the School of Pharmacy (e.g. grade of 0 for assignment, failure of the course, professional development assignment, dismissal from the pharmacy program, etc) - Administrative sanctions are those implemented by OSCCR and the NU Student Judicial Hearing Board (e.g., probation, deferred suspension, expulsion, etc). If you have any questions related to these policies, please contact your professor prior to submitting work for evaluation.
STUDENT WELLNESS:	As health professionals, researchers and faculty, we do our best to maintain a healthy, balanced life. As a student however, you may experience a range of challenges including significant stress, difficult life events, mood changes, excessive worry, or problems with eating and/or sleeping. These can diminish your academic performance and/or reduce your ability to participate in daily activities. If you or anyone you know is struggling, we strongly encourage you to seek support. Northeastern University provides several services and resources to support the overall wellness of students: University Health and Counseling Services Find at Northeastern We Care As always, please contact Northeastern University Police Department at 617-373-3333 in emergency situations.
STUDENTS WITH DISABILITIES:	The Disability Resource Center (DRC), located on campus in 20 Dodge Hall (617-373-2675) can provide students with information and other assistance to help manage any challenges that may affect their performance in the coursework. The University requires that students provide documentation of their disability to the DRC. Students should also meet with the course instructor for special accommodations to be arranged. Northeastern University abides by Section 504 of the Rehabilitation Act of 1973, which stipulates that no student shall be denied the benefits of an education "solely by reason of a handicap." Disabilities covered by law include but are not limited to, learning disabilities and hearing, sight

	or mobility impairments. Additional information about DRC can be found online at http://www.northeastern.edu/drc/
TITLE IX POLICY:	Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance. Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including students, faculty and staff of all gender identities. Learn more at: (https://www.northeastern.edu/ouec/training-and-education/syllabus-language-title-ix/ Alleged violations can be reported non-confidentially to the Title IX Coordinator within The Office for Gender Equity and Compliance at: titleix@northeastern.edu and/or through NUPD (Emergency 617.373.3333; Non-Emergency 617.373.2121). Reporting Prohibited Offenses to NUPD does NOT commit the victim/affected party to future legal action.

COURSE SCHEDULE (TOPICS AND QUIZ DATES ARE SUBJECTED TO CHANGE)

LECTURE		DATE	FACULTY	TOPIC	QUIZ AND EXAM SCHEDULE
1	M	05/09	Manetsch	Course Overview Introduction to Infectious Diseases and Antimicrobials - Antimalarials	
2	W	05/11	Soukos	Infectious Agents and the Miracles of Microbiology Prokaryotic vs. Eukaryotic Cells – Evolution of Complex Life on Earth	
3	M	05/16	Soukos	The Invisible Universe of the Human Microbiome Goals of the Human Microbiome Project	
Reflection #1: "Hunting the Nightmare Bacteria" and "We Are Losing the War and Here is Why!" due via Canvas by 10:15 AM EST on 05/18					
4	W	05/18	Soukos	Microbes – Metabolism, Genetics, Identification (1)	
5	M	05/23	Soukos	Microbes – Metabolism, Genetics, Identification (2)	Quiz 1: Lecture 1

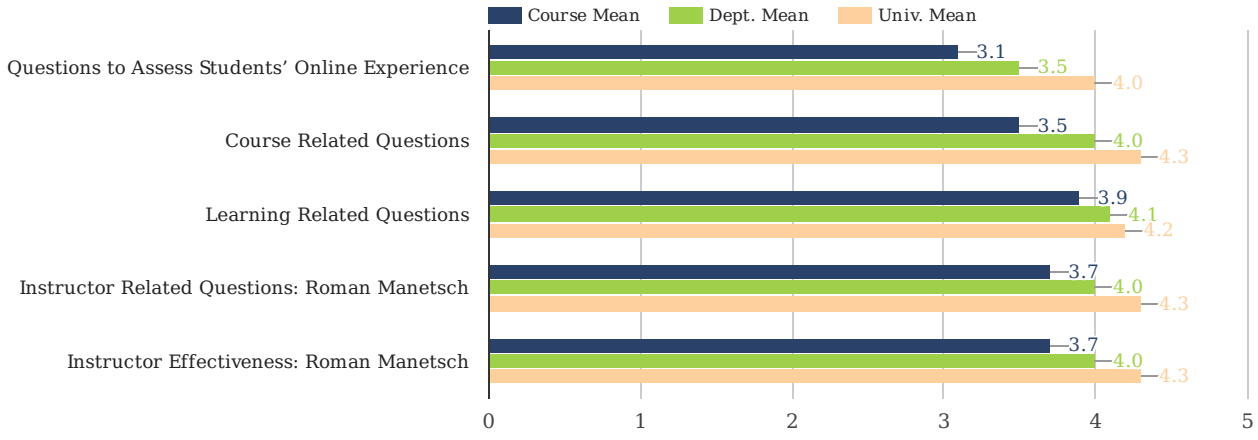
Reflection #2: "Breaking the Mould" due via Canvas by 10:15 AM EST on 05/24					
6	W	05/25	Soukos	Infectious Diseases (1)	
	M	05/30	Memorial Day: No Class		
7	W	06/01	Soukos	Infectious Diseases (2)	
8	M	06/06	Soukos	Infectious Diseases (3)	
9	W	06/08	Brade	Antibiotics 1 – Beta Lactams (1)	
10	M	06/13	Brade	Antibiotics 2 – Beta Lactams (2)	Exam 1: Lectures 2-8
11	W	06/15	Brade	Antibiotics 3 – Gram-positive Agents: Vancomycin, Daptomycin, Telavancin, Dalbavancin, Oritavancin	
	M	06/20	Juneteenth: No class		
12	W	06/22	Brade	Antibiotics 4 – Gram positive agents continued: Linezolid, Tedizolid, Lefamulin, Clindamycin	
13	M	06/27	Brade	Antibiotics 5 – Macrolides, Tetracyclines, & Tigecycline	Quiz 2: Lectures 9-12
14	W	06/29	Brade	Antibiotics 6 – Sulfonamides (Bactrim, Sulfadiazine), Quinolones, & Metronidazole	
	M	07/04	Independence Day: No Class		
15	W	07/06	Brade	Antibiotics 7 – Aminoglycosides, Polymyxins, Fosfomycin, and Miscellaneous + Clinically Relevant Organisms	
16	M	07/11	Brade	Antimicrobial Susceptibility Testing + Antimicrobial Resistance, Pharmacodynamics Overview	
17	W	07/13	Brade	Antibiotics 8 – Anti-tubercular Agents	Quiz 3: Lectures 13-16
18	M	07/18	McCoy	Antifungal Agents (Echinocandins, Azoles, Polyenes, 5-FC, Terbinafine)	Exam 2: Lectures 9-17
19	W	07/20	McCoy	Antiviral Agents 1	
20	M	07/25	McCoy	Antiviral Agents 2	
21	W	07/27	McCoy	Antiviral Agents 3	
22	M	08/01	Thakur	Review of Medicinal Chemistry Concepts	Quiz 4: Lectures 18-21
23	W	08/03	Thakur	Medicinal Chemistry Aspects of Anti-infectives 1	
24	M	08/08	Thakur	Medicinal Chemistry Aspects of Anti-infectives 2	
25	W	08/10	Thakur	Medicinal Chemistry Aspects of Anti-infectives 3	Quiz 5: Lectures 22-24
	M	08/15	Exam 3: Lectures 19-25		

Anti-Infectives (Full Summer 2022)

Instructor: **Manetsch, Roman**
Section: **01**
Course Title: **Anti-Infectives**
Course ID: **50386**
Objectives:

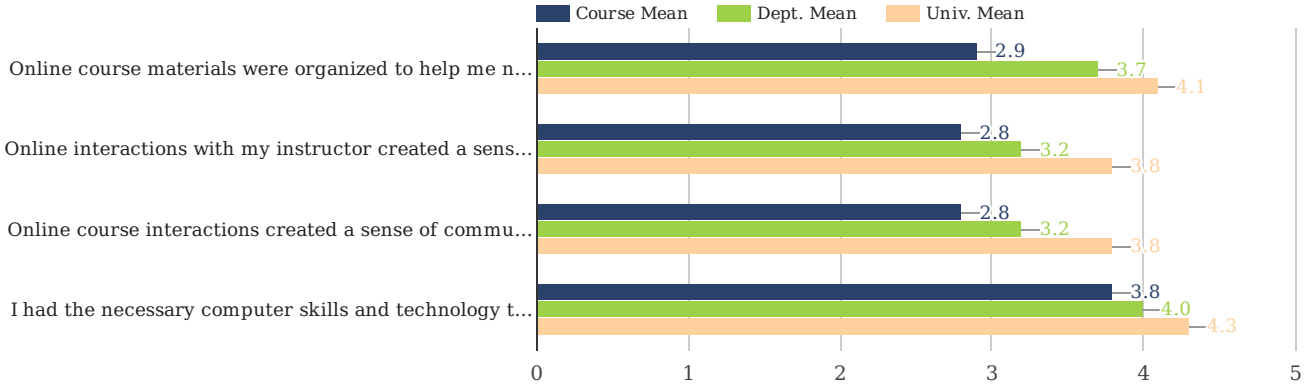
Enrollment: **95**
Responses Incl Declines: **95**
Declines: **2**

Category Summary



Category	Number of Responses	Response Rate	Mean	Dept. Mean	Univ. Mean	Median	Dept. Median	Univ. Median	STDEV
Questions to Assess Students' Online Experience	363	95.5%	3.1	3.5	4.0	4.0	4.0	4.0	1.7
Course Related Questions	180	94.7%	3.5	4.0	4.3	4.0	4.0	4.0	1.1
Learning Related Questions	363	95.5%	3.9	4.1	4.2	4.0	4.0	4.0	1.0
Instructor Related Questions: Roman Manetsch	722	95.0%	3.7	4.0	4.3	4.0	4.0	5.0	1.2
Instructor Effectiveness: Roman Manetsch	93	97.9%	3.7	4.0	4.3	4.0	4.0	5.0	1.2

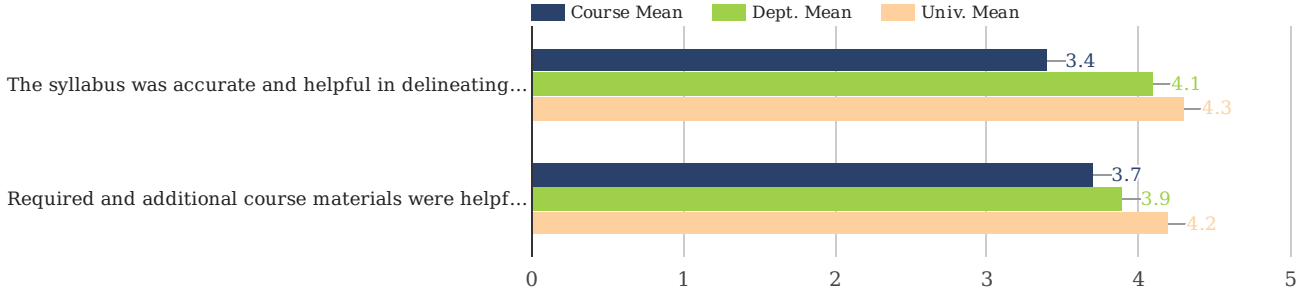
Questions to Assess Students' Online Experience



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
Online course materials were organized to help me navigate through the course week by week.	91	95%	2.9	3.7	4.1	3.0	4.0	4.0
Online interactions with my instructor created a sense of connection in the virtual classroom.	91	95%	2.8	3.2	3.8	3.0	4.0	4.0
Online course interactions created a sense of community and connection to my classmates.	90	94%	2.8	3.2	3.8	3.0	4.0	4.0
I had the necessary computer skills and technology to successfully complete the course.	91	95%	3.8	4.0	4.3	4.0	4.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree; 0:N/A;

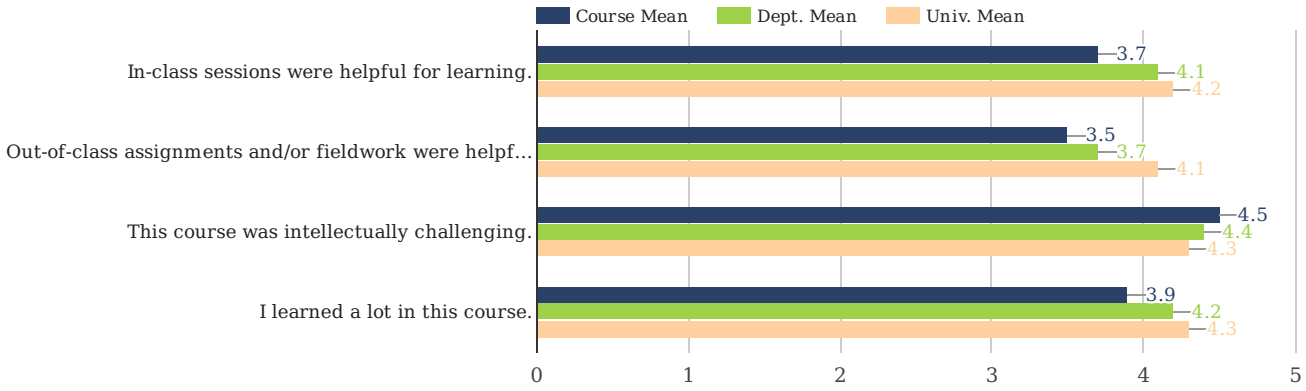
Course Related Questions



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
The syllabus was accurate and helpful in delineating expectations and course outcomes.	90	94%	3.4	4.1	4.3	4.0	4.0	5.0
Required and additional course materials were helpful in achieving course outcomes.	90	94%	3.7	3.9	4.2	4.0	4.0	4.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

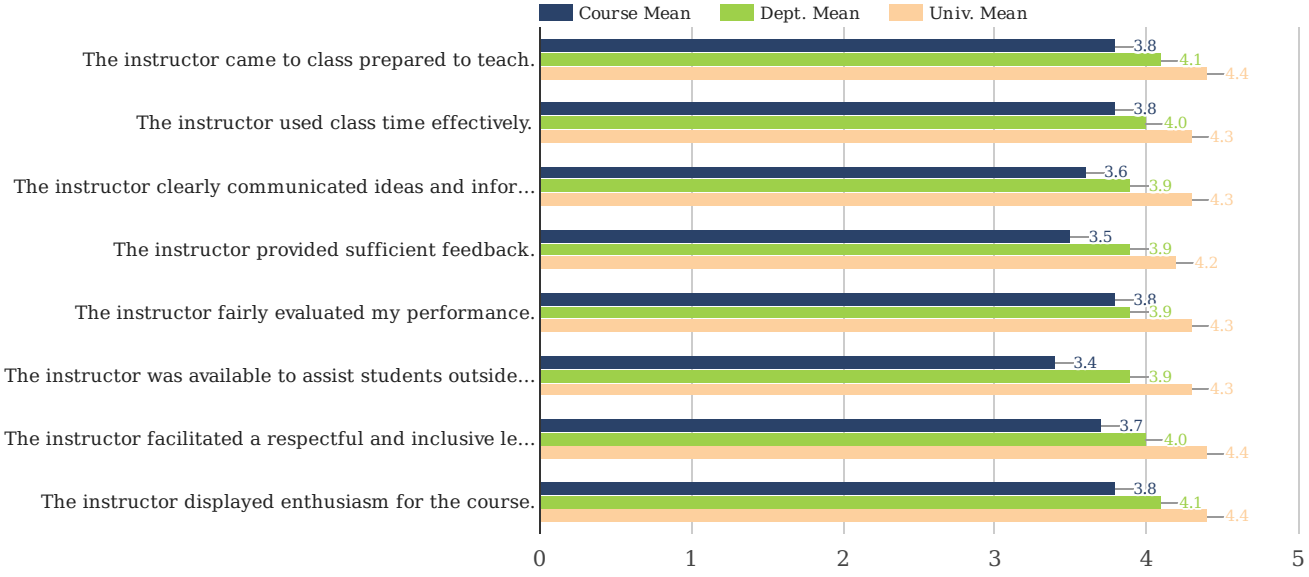
Learning Related Questions



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
In-class sessions were helpful for learning.	91	95%	3.7	4.1	4.2	4.0	4.0	4.0
Out-of-class assignments and/or fieldwork were helpful for learning.	90	94%	3.5	3.7	4.1	3.5	4.0	4.0
This course was intellectually challenging.	91	95%	4.5	4.4	4.3	5.0	5.0	5.0
I learned a lot in this course.	91	95%	3.9	4.2	4.3	4.0	4.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

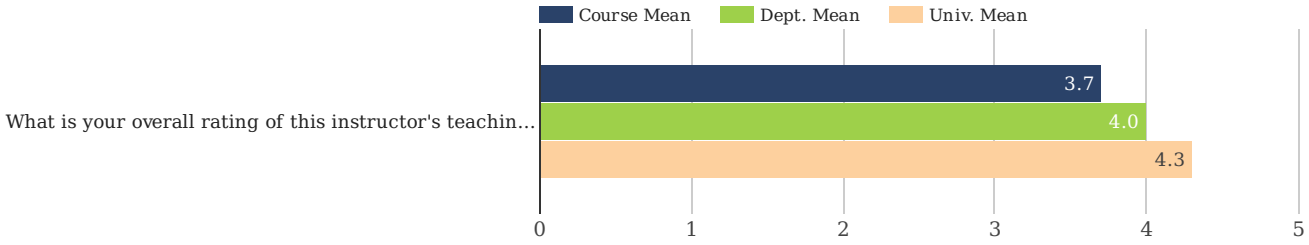
Instructor Related Questions: Roman Manetsch



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
The instructor came to class prepared to teach.	91	95%	3.8	4.1	4.4	4.0	4.0	5.0
The instructor used class time effectively.	91	95%	3.8	4.0	4.3	4.0	4.0	5.0
The instructor clearly communicated ideas and information.	91	95%	3.6	3.9	4.3	4.0	4.0	5.0
The instructor provided sufficient feedback.	90	94%	3.5	3.9	4.2	4.0	4.0	5.0
The instructor fairly evaluated my performance.	89	93%	3.8	3.9	4.3	4.0	4.0	5.0
The instructor was available to assist students outside of class.	90	94%	3.4	3.9	4.3	4.0	4.0	5.0
The instructor facilitated a respectful and inclusive learning environment.	90	94%	3.7	4.0	4.4	4.0	4.0	5.0
The instructor displayed enthusiasm for the course.	90	94%	3.8	4.1	4.4	4.0	4.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

Instructor Effectiveness: Roman Manetsch

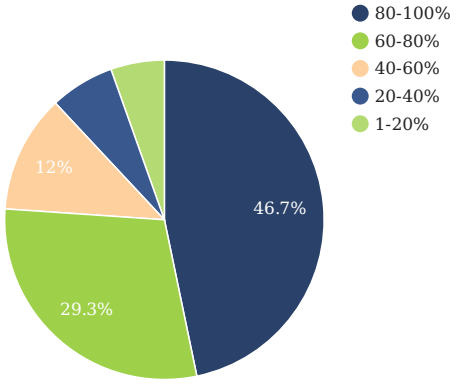


Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
What is your overall rating of this instructor's teaching effectiveness?	93	97%	3.7	4.0	4.3	4.0	4.0	5.0

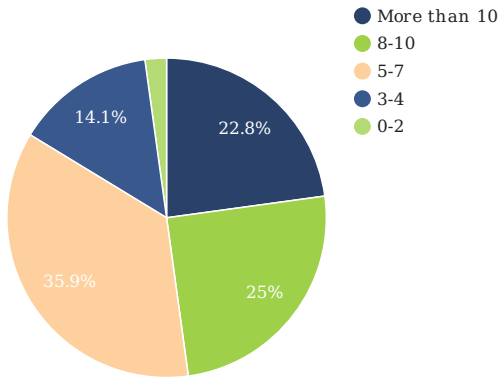
Note: 5:Almost Always Effective; 4:Usually Effective; 3:Sometimes Effective; 2:Rarely Effective; 1:Never Effective;

Demographics

How often did you attend this class both in-person and remotely?



The number of hours per week I devoted to this course outside scheduled class meeting times.



Anti-Infectives (Full Summer 2022)

Instructor: **Manetsch, Roman**
Subject: **PHSC**
Catalog & Section: **5360 01**
Course ID: **50386**
Objectives:

Enrollment: **95**
Responses Incl Declines: **95**
Declines: **2**

Instructor Related Questions: Roman Manetsch (60 comments)

Q: What were the strengths of this course and/or this instructor?

1	responded well to student feedback
2	His one lecture was also useless information. Bad communication throughout the course. Would not want him coordinating any of my other courses.
3	He is a very helpful course coordinator. He makes sure to update the syllabus and send out announcements to clarify any issues or scheduling conflicts that may arise during the semester.
4	n/a
5	great class
6	Passionate and knowledgable about material taught.
7	He was pretty clear in his announcements about the course. Was fair and took a quiz question off when most of the class got it wrong on his material.
8	No strengths
9	Dr. Manetsch was a knowledgeable and enthusiastic professor that always sought to engage the class. I enjoyed his few lectures.
10	He didnt really do that much
11	K Brade was not listed here as a professor though she taught like a third of this class. She was not receptive to feedback and when students did not think a question was fair she didn't really care.
12	Was very flexible when responding to student scheduling issues.
13	The instructor was always prepared and answered to any questions. I really enjoyed learning in this course.
14	this course was NOT offered online. The course coordinator was NOT flexible at all for having students attend class virtually.
15	Hard to reach out to, the class was disorganized in many ways.
16	very enthusiastic, provided solid base for the course
17	knowledgable
18	Very understanding
19	Makes the course interesting and effective teaching
20	The one and only lecture he taught was very well thought out and helpful. I'm not sure what bad karma he has built up to be stuck as course coordinator for this class, but it is ridiculous for him to be course coordinator when he is only responsible for one lecture.

Q: What could the instructor do to make this course better?

1	Better communication and feedback to students
2	N/A
3	The AI course is interesting but I do feel that it lacks organization at times.
4	Notoriously bad at responding to students. Confusing set up for the course materials on canvas I will also review Dr Karrine Brade here since she is otherwise not present on this TRACE. Dr Brade was singularly disappointing and insultingly egotistical with her attitude towards the class as a whole Forcing the class to attend in person, especially with COVID still being very much present was an egregious disrespect in my opinion. She also seemed uncaring to student's difficulties with the course on an individual basis as well. I remember a moment where she called out another student who was leaving the class halfway through, this was awkward and must have been embarassing for the girl who was leaving and now had to be called out in front of everyone. I also came to learn that she complained about the class' "attendance issues" and lack of interaction to her APPE students, this is wholly unprofessional. If I had some terrible infection and was septic I would love to have Dr Karrine Brade on the care team taking care of me. However, as an instructor she is a rather unpleasant person and this has overshadowed her knowledge and what could have been a good learning experience.
5	This course should actually teach usable material for the first third of the course and not leave med chem for the last three lectures before

	the final.
6	n/a
7	poor organization of the course in canvas
8	Overall as a course coordinator, the class was unorganized. There was little communication between coordinator and students. Exam and quiz dates were changed out of the blue, which I understand that syllabi can be changed at the discretion of the professors, but the fact that the whole entire class was confused on exam dates shows that there was no communication. The way that lectures were given after exams was entirely unorganized and it was to no fault of the professor, only the organization of the course. Perhaps consider making recordings of lectures for after exams because students are exhausted from studying and taking an exam and can't focus on a lecture after. Additionally, the way that exams were done was not proficient. Having TAs constantly yelling at us multiple times over any clarifications on an exam question is not helpful to students as it interrupts our thought process, which negatively impacts our exam performance. Consider writing patient cases on all questions because it is confusing and stressful for students to have to figure out what questions go together. It has been done before in many of our other classes and that is the expectation that we have when we walk into an exam. We want to feel prepared to take the exam and it is only fair for the exam to be prepared properly for us. Historically, all pharmacy classes have been recorded, and the fact that one specific professor took them away without giving students any warning was unfair. It seemed like there was a lack of communication between the lecturers, coordinator and students. The way that the lecturer went directly to the coordinator, who went to the Dean of Bouve (not even the Dean of Pharmacy) made students feel betrayed. When recordings were taken away, it felt like out of the selfishness and ego of the professor, rather than something that would help students.
9	More timely responses to student needs. Prof. Brade's material is very difficult compared to Soukous's and it is a big shift in difficulty between the two exams. I would recommend that Prof. Brade release a study guide to help students distinguish what is important and what is nice to know. Additionally, it is very confusing to learn about what drugs have effect against what bacteria and then also learn how drugs are actually used in clinical settings. Hard to tell which we are supposed to memorize
10	This course is beyond what any normal person can begin to comprehend. I truly do not understand why anyone thinks I have the capacity in my brain to memorize such an insane amount of information that I will likely forget immediately after the course and will DEFINITELY be able to look up in the course of my practice. This is simply not reasonable for a pharmacy course taught in the 21st century. The lack of communication, the disregard for student mental health, and the unreachable expectations made this the worst class I've ever taken.
11	I have never hated a class before and this class was the worst class I have ever taken in my over 4 years here. The amount of material was unreasonable and was on the level of an infectious disease specialist. There is no benefit to trying to memorize a huge amount of information just to forget it all after the exam. I spent the most time on this class this semester when it should not have been my priority. There was also so little communication and it took so long to get a response. For example, we had a quiz on 4 lectures and the quiz only asked material from 1 lecture. The professor told us it was on 4 lectures equally and it was not. I have never felt tricked by a professor until this class.
12	I understand coordinating a whole course is difficult work. A little more responsiveness in communication would be much appreciated. Please continue to have recordings for this class as standard practice and, if possible, improve the quality of the audio. Thank you for helping us succeed!
13	As a class coordinator he had an absolutely terrible reputation for answering his email and it proved to be very true.
14	I don't understand why he is the course coordinator. He only taught one class which was completely irrelevant to the rest of the course and also was oblivious to issues since he rarely showed up in the classroom other than to proctor assessments. He also let Dr. Brade alienate the entire class by speaking down to students and allowing her to remove Zoom recordings. He should either not be the coordinator because he doesn't teach and lets other instructors make detrimental decisions, or should take a bigger role and step up when students voice their concerns.
15	Upload zoom meeting early.
16	I could write an essay but main points: - organize canvas - dont upload a million copies of the syllabus - allow students flexibility in attending class virtually - dont change syllabus rules mid-semester aka dont stop recording lectures? - RESPOND TO EMAILS ON TIME - hold TA's accountable as they are meant to help students - Provide study guides, exam review sessions.
17	Never responded to emails, constantly changed the syllabus. Unnecessarily frustrating and stressful semester with this course.
18	Where is Brade?
19	The grading policy could be guided to provide students with more opportunities to get better grades for this class.
20	coordinate better with the other instructors
21	some information tested was not clearly explained in class
22	I think Dr. McCoy should be more accessible because his material covers too many agents in one class.
23	I feel a little bad that he is going to be stuck with all the terrible reviews when it is mostly due to Drs Brade and McCoy, but he is course coordinator. At one point he was also ignoring emails from students resulting in our exam being moved only 1-2 weeks before. Also, having 8 question quizzes that cover 4 2-hour lectures was torture. That is not a quiz, that should be an exam. It is unreasonable to

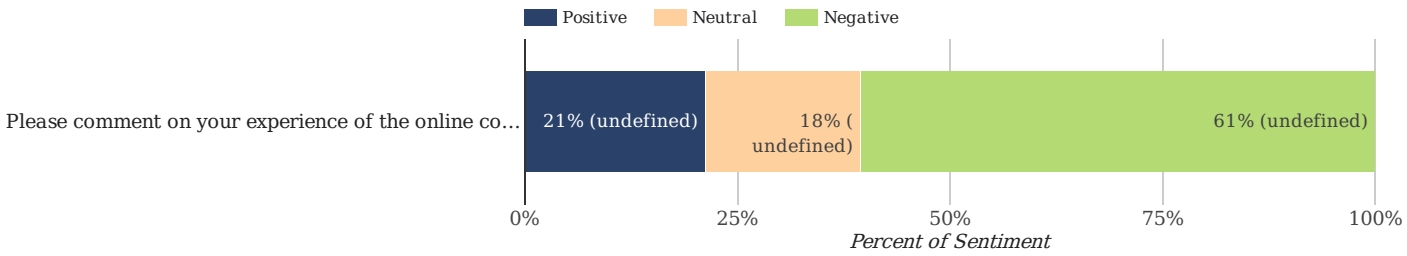
ask of students.

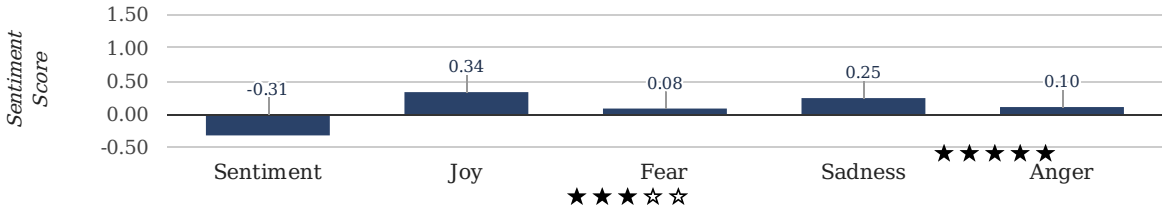
Q: Please expand on the instructor’s strengths and/or areas for improvement in facilitating inclusive learning.

1	N/A
2	This course seems not set up to help students succeed, rather the attitude towards this class by the students seems to be as an obstacle to be struggled through with learning being set aside as a side effect rather than the main point of the course.
3	n/a
4	n/a
5	He is very accommodating and wants the best for his students but communication is sometimes unclear or delayed.
6	As a lecturer, Dr. Manetsch is able to relay the material well. As a course coordinator, he seems to be at the mercy of the lecturers and doesn't seem to be making decisions on his own nor decisions that is helpful to students.
7	There simply has to be a better way. I hope that in the new curriculum this is done VERY VERY differently. Very disappointed that I spent thousands of dollars to be berated, mislead, and expected to memorize heaps of useless information.
8	The way he ran the class was extremely organized, the class had crazy expectations of what they expected us to know and learn in a very short amount of time. This class needs a complete overhaul. It is completely helpless at this point. This professor also would run around the class during quizzes and exams trying to find people cheating to the point where he started accusing people of cheating who wasn't cheating. It was an extremely distracting environment to be in.
9	Mccoy had students study for 4 lectures and only included questions on 1 lecture- a complete waste of students' time and efforts. Brade's material was very extensive and her exam was difficult.
10	The instructor did not respond to emails regarding the course.
11	He was direct which was good
12	The instructor was always prepared and answered to any questions. I really enjoyed learning in this course.
13	- please learn to respect students. The way you insulted one of the students in the quiz was so embarassing! - please learn how to coordinate - please dont stress students out more than they already are - please learn to respond to emails in a timely manner - please learn how to organize canvas - please learn how to use your TA's in order to benefit students
14	Professor Brade had unreasonable expectations in my opinion, and did not set the students up for success. She taught her section as if we had already graduated pharmacy school and had a baseline knowledge of anti-infectives. He slides were disorganized and the material was not digestable. The fact that so many students did so poorly on her material on exam 2 should be an indication of her efficacy as an instructor. Not to come off as an attack; but I genuinely thought her entire section of this course was extreme and unreasonable. We take difficult classes in this program (this is expected), but her part of the course was so far beyond the scope of what is reasonable to expect from students, and set many students up for failure.
15	Dr. Manetsch should teach more lectures because he very good at explaining material
16	Dr. Brade: I have never seen lecture material be organized so poorly. There was material in the 2nd to last lecture she taught that was referenced in the first. She was also the most unpleasant lecturer I have ever encountered when asking a question.
17	Thakur cares about his students and is a GREAT professor

Questions to Assess Students’ Online Experience (33 comments)

Q: Please comment on your experience of the online course environment in the open-ended text box.





3	the powerpoints and zoom links pdf was a mess and nothing was organized-- hard to find anything ★ ☆ ☆ ☆ ☆
4	Brade was often very condescending when asking questions to the class on material we had just learned prior. It doesn't encourage people to speak, it only makes for a more hostile environment. McCoy's slides weren't helpful for learning, especially the HIV powerpoint. The charts make it difficult to identify what the important takeaway is. ★ ☆ ☆ ☆ ☆
5	Content could only be found in the files section of canvas so it became extremely difficult to sort through all the files to find the content you need. Additionally, there was disputes about recordings being available or not. While I do understand the desire for in class attendance, I do not think taking away recordings is an appropriate solution, especially for a class that moves at the pace that this one does. It ultimately did not significantly increase attendance from what I observed and only caused students to be underprepared for their exams and their future professional career. It also put a huge amount of stress on student and ultimately we are paying for this information so you would think that we should be able to access the material in the way we have communicated to best serve our needs. ★ ★ ☆ ☆ ☆
6	Lectures were being recorded on Zoom perfectly well for the first half of the semester, and then for the second half they wouldn't upload them to the cloud, so we'd have to rely on TAs to post the links on a document and they would take days to do so. Very disorganized and the professor never answered his email. TAs also didn't respond in a timely manner. ★ ☆ ☆ ☆ ☆
7	I wish that lectures were better organized on canvas including both recordings and powerpoints from each lecturer. I also feel that course coordinators were slow/unresponsive at resolving issues. Lastly I did not enjoy the design of the course. The topics felt disjointed at times and Dr. Brades section of the course specifically was not set up in a way that was conducive to learning. ★ ☆ ☆ ☆ ☆
8	Overall, this class course on Canvas was unorganized. Modules were set up, but faculty were unaware or not told to use the modules, therefore making them useless and the canvas course unorganized as students had to scroll through lists of files in order to find the slide deck they needed. Additionally, there was a lot of disorganization with class recordings. Historically, all pharmacy classes have been recorded, and the fact that one specific professor took them away without giving students any warning was unfair. It seemed like there was a lack of communication between the lecturers, coordinator and students. The way that the lecturer went directly to the coordinator, who went to the Dean of Bouve (not even the Dean of Pharmacy) made students feel betrayed. When recordings were taken away, it felt like out of the selfishness and ego of the professor, rather than something that would help students. There was no online course interactions nor discussion boards where students felt like they could ask questions. Additionally, when emailing Professor Brade, she never responded to my questions, making it seem like she did not care about the students at all. Course disorganization is even shown in this TRACE eval, as not all of our lecturers are present on this form, making it difficult for students to give proper feedback. ★ ☆ ☆ ☆ ☆
9	This course was supposed to be hybrid however, zoom links were taken away periodically halfway through the semester. ★ ☆ ☆ ☆ ☆
10	Recording is so necessary ★ ★ ★ ★ ☆
11	the experience was fine . I suggest activating discussion board in this class communication was always not clear between faculty and students. ★ ★ ☆ ☆ ☆
12	The course materials were posted to Canvas but the organization/use of modules could be better. The discussion board was also not always available. While we very much appreciated the lecture recordings, the audio quality was poor and a better way to capture that would be great. ★ ★ ★ ★ ☆
13	Modules were not utilized, instead all files were in one tab. ★ ★ ★ ☆ ☆
14	The online elements of this class were by far the weakest of the semester. Not offering recordings during Brade's lectures terrible quality in the lecture hall that was never solved. And I am now noticing a lack of Dr. Brade being in this evaluation. She was the only instructor I have very strong opinions on this time around. ★ ☆ ☆ ☆ ☆
15	terrible mic system in the lecture room. Recording issues many times ★ ☆ ☆ ☆ ☆
16	Presentation slides were extremely helpful; however, it would be better if zoom recording is uploaded right after classes instead of few days later. ★ ★ ★ ★ ★
17	Dr thakur is amazing. the only instructor who actually cared about students in this course. ★ ★ ★ ★ ★
18	All the powerpoints were uploaded in files. They were not organized into modules. Modules were posted for each lecturer but none of the materials were posted into them. ★ ☆ ☆ ☆ ☆
19	The files were a bit disorganized and it was hard to find material. ★ ☆ ☆ ☆ ☆
20	Professors Soukos and McCoy did NOT upload their lectures under the module. The files were messy to search through. ★ ☆ ☆ ☆ ☆
21	Modules were made but rarely used, so we had to scroll through the files for the course. Recordings were posted in a document that was reuploaded after every single class (not in a timely manner, even when there was an exam or quiz coming up) and it just clogged it up more,

	making all material hard to find. The recordings were also recorded with terrible audio quality and no attempts were made to correct it. ★★★★☆
22	Lecture recordings were not posted in an organized manner, and the pushback to posting certain recordings from Professor Brade was not fair to students. We have multiple obligations and personal lives which can sometimes affect class attendance. ★★★☆☆
23	Online option was removed by the coordinator mid-semester even though it was established in the syllabus in the beginning of the course ★★★☆☆
24	n/a ★★★☆☆
25	Class materials were not uploaded in a way that was easy to navigate. Slides were uploaded to files, even though there were areas in modules for each professor to put their materials. This meant combing through every file ever uploaded to find the one for that days lecture. Having them available in modules under each professor would be much more helpful. In addition, finding recordings for the lectures was difficult. Having links posted with the passwords in the modules area with the slides would also be helpful. Alternatively, a new section could be added to the modules area called "recordings", and all the recording links could be made available there. ★★★★☆
26	I am unsure of why it was decided that the zoom meetings were not recorded directly to the class canvas page. Making the document of zoom links and passwords not only delayed review of the material, but also created more work for the TAs. Since there is no section to comment on the other professors, I will do so here. Prof. Brade is very knowledgeable on antibiotics and bacteria, but her slides had a lot of content on them that was not organized in a manner where I could efficiently learn and understand what the important content was. It was confusing to have not only the indications for the various bacteria, but also random facts about each antibiotic thrown in for each lecture. It would be helpful to organize all of this information in a clearer manner. For Prof. McCoy, there are way too many charts on his slides that he only expects us to know part of. Additionally, it was mentioned that we did not need to know abbreviations, but then many of the subsequent slides only included abbreviations for drugs which leads to confusion and needing to search through the powerpoint to find what the abbreviations mean. An example of where it would be helpful to summarize the main point of the slide instead of including a chart: for protease inhibitors, he indicated that we should not use them with rifampin due to effects on CYP3A4, but when you use rifabutin as an alternative you need to up the dose of both the PI and rifabutin to overcome the inducive effects. This is an important thing to know, but is nearly impossible to discern from the slide where the info comes from unless you write verbatim what he says during lecture. ★★☆☆☆
27	can't really hear things clearly on recordings ★☆☆☆☆
28	There was no online environment, they took away our recordings in the middle of the semester bc they disliked that attendance was low when attendance was not required, the canvas page was unorganized, the syllabus was incorrect. I have never felt so unsupported. When we did have recordings, the professors would not use a microphone so the audio was terrible. ★☆☆☆☆
29	The course was extremely disorganized on Canvas. There was an issue with recording lectures for a variety of reasons (attendance, even though it is not a grade) and technical difficulties. ★☆☆☆☆
30	They made modules for each professor but never uploaded the ppts into them so you just had to search in Files to find all the uploaded course material. Was not organized. The syllabus was not indicative of the quiz material. It would say a quiz would have X lectures on it and the professors would say the material would be tested fairly but then the quiz would only have 1 lecture on it. So we weren't able to study effectively or focus our studying. Also in an exam situation, instead of giving everyone a point when a question was "thrown out" they actually like just got rid of it. Which made the exam less questions. Instead of giving everyone the point (which is what happens in CDM or JP). I did not like the format of this class. We had no way to practice with the material. No CDM-style quizzes to get used to the questions, or extra practice questions. Also K Brade would mute her recording when explaining a patient case or question so for students that were watching at home they wouldn't get the actual information. That is unfair. I had covid at one point and couldn't go to class and the professors never responded to my email for a recording. It was eventually resolved as they resumed recording but the communication with the professors was lacking. ★☆☆☆☆
31	The instructors actively made online engagement a hostile experience by taking away the ability to attend synchronously via Zoom and access recordings on the same day (and begging from the students) ★★☆☆☆
32	I thought it was unreasonable that they tried to take away the zoom recordings. That was uncalled for since we are in graduate school and attendance is not mandatory there is no reason to punish everyone for people choosing whether or not to attend live class. ★☆☆☆☆
33	slides could be organized better within modules section ★★★☆☆

Student Self-Assessment of their Effort to Achieve Course Outcomes (19 comments)

Q: What I could have done to make this course better for myself.

1	I think i should have studied harder for quizzes. I did okay on most quizzes but I would've felt more prepared going into finals if I had done well on all quizzes

2	n/a
3	Begin studying material sooner than I did.
4	See recording. Course is very difficult and hard to understand by just going to the class.
5	Not sleep? Not eat? Not study for other class? I don't even know
6	Nothing, I studied an absurd amount and still barely did better than the average. My goal switched from doing well to just passing.
7	Unlike other classes, I believe drawing out charts/spectra are more important than flashcards for this class.
8	NA
9	The most conflicting part was memorization because it contains lots of memorization. I could have made flashcards to help studying materials.
10	I already did everything I could to succeed in this class.
11	Memorize, memorize, memorize
12	more background info for learning the drugs would be nicer, they expected us to know way more background knowledge than we actually had
13	Attend 100% of class
14	been more organized with my own studying
15	study more
16	I do not know, I studied a lot for this course and it was just a bunch of memorization. The material was taught in an order that does not help students, such as learning MIC after we already learned all the antibiotics. Being expected to know clinically relevant bacteria before we were told to know it. We were told to know the clinically relevant bacteria on our first antibiotic lecture and then more were added in later lectures without us learning about them previously. If we are suppose to focus on the highlighted material and everything is highlighted it does not help use break things down. If the objectives are basically to memorize everything then I think the material should be more spread out so we have more time to actually learn. I studied so much and did not get the results I was looking for.
17	Study for quizzes more in advance because they contained a lot of material
18	I had no idea what to expect from the first exam, I should have asked for practice questions
19	n/a

Course Syllabus

Organic Synthesis 1

CHEM 5626, 3 Credit Hours, Fall 2022

Instructor: Roman Manetsch
Office: Hurtig Hall 403
E-mail: r.manetsch@northeastern.edu
Office hours: Please contact Associate Professor Roman Manetsch by e-mail to set up a day and time to meet.

Lectures: Tuesdays from 6:00 PM to 8:30 PM. The course (i.e. lectures) will be taught in person, Changes to the schedule will be announced via Canvas.

Room: Hastings Suite 118

Credit Hours: 3 Semester Credit Hours

Instructional Methods: Course materials will be made available on Canvas. Lectures will be delivered in person. A virtual forum will be available to centralize questions that will be addressed by the instructor.

Course Description and Course Objectives: This course aims to provide students with a comprehensive understanding of some of the most important reactions in organic synthesis. The course will discuss important concepts of synthetic chemistry and cover key transformations employed by practicing organic chemists. The course will also emphasize practical aspects of reactions as these are critical for selecting and designing a synthetic route. Furthermore, this course will focus on chemical principles important for reactivity and selectivity.

Tentative Course Schedule:

Lectures	Dates	Topics	Reading
1	09/13	Introduction; Alkylation of Enolates and Other Carbon Nucleophiles	Chapter 1
2	09/20	Alkylation of Enolates and Other Carbon Nucleophiles	Chapter 1
3	09/27	Reactions of Carbon Nucleophiles with Carbonyl Compounds	Chapter 2
4	10/04	Reactions of Carbon Nucleophiles with Carbonyl Compounds	Chapter 2
5	10/11	Concerted Cycloadditions, Unimolecular Rearrangements, and Thermal Eliminations	Chapter 6
6	10/18	Organometallic Compounds	Chapter 7
7	10/25	Midterm Exam	
8	11/01	Reactions Involving Transition Metals	Chapter 8
9	11/08	Carbon-Carbon Bond-Forming Reactions of Compounds of Boron, Silicon, and Tin	Chapter 9
10	11/15	Reduction of Carbon-Carbon Multiple Bonds, Carbonyl Groups, and Other Functional Groups	Chapter 5
11	11/22	Reactions Involving Carbocations, Carbenes, and Radicals as Reactive Intermediates	Chapter 10
12	11/29	Oxidations	Chapter 12
13	12/06	Final exam	

Recommended Textbook: Francis A. Carey, Richard J. Sundberg, *Advanced Organic Chemistry, Part B: Reactions and Synthesis*, 5th edition; Springer, 2007.

The use of calculators and other electronic devices: Students are permitted to bring *non*-programmable calculators to examinations to aid in performing arithmetic calculations, logarithms, and others.

Molecular Models: Molecular models are optional and may prove helpful. For the exams, molecular models are permitted.

Homework: Homework will cover topics discussed during the lectures, in the book chapters, and in course handouts. Homework sheets focus on material covered during the latest lectures and chapters. It is possible that you may have to read the book to answer some of the questions. Students are expected to work meticulously through homework problems on their own. At least ten homework sheets will be given. Selected homework sheets will be collected and graded.

Examinations, Homework and Grading: Exams will cover all of the material from the beginning of the course, with emphasis on material since the previous exam. Students are expected to take each examination during the scheduled time. Students are allowed to refer to class notes, summaries, memory aids, textbooks, or other approved material while answering questions. Make-ups will not be permitted. To be excused from taking one of the two-hour exams, the student must provide an acceptable written excuse prior to the examination period. If the excuse for the missed examination is justified, the course grade will be based on the remaining examinations.

Students are responsible for finding grading errors on exams. Requests for re-grading must be submitted within one week following return of the examination. Requests for changes in scoring will not be accepted later than one week after exams are returned.

Student overall performance will be evaluated based on selected problem sets, one mid-term exam, and the final exam.

Problem Sets	100 points
Midterm Exam	100 points
Final Exam	100 points
Total	300 points

A general guide to grade cut-offs is given below:

A	≥ 90%	B-	70.0-74.9%
A-	85.0-89.9%	C+	65.0-69.9%
B+	80.0-84.9%	C	60.0-64.9%
B	75.0-79.9%	F	< 60.0%

Incompletes: An **I** grade will be assigned only when a prior arrangement has been made with the instructor. It will only be considered when the final exam is not taken and when homework completed to that date is satisfactory. If the final exam is not taken and homework completed prior to that date is unsatisfactory an F will be given. An “Agreement for Making-up an **I** Grade” form must be completed and signed by the instructor, student and turned in within 48 hours after the final exam.

Academic honesty: Any student found to be committing academic dishonesty at any point in the course may receive an “F” for the course and NU OSCCR will be notified. The minimum sanction for academic dishonesty is a grade of 0% for that assignment; a report of the incident filed with both the Dean’s Office in 206 Mugar, and NU OSCCR.

Northeastern University is committed to the principles of intellectual honesty and integrity. All members of the Northeastern University community share the responsibility to bring forward known acts of apparent academic dishonesty. If you witness an act of academic dishonesty in this course, you should report it to the course coordinator.

Students are expected to maintain the highest standards of honesty and integrity according to the Code of Student Conduct at Northeastern University. Please refer to detailed information regarding academic integrity policy (http://www.northeastern.edu/osccr/academic-integrity-policy/) and the Code of Student Conduct (http://www.northeastern.edu/osccr/code-of-student-conduct/). Students are expected to be familiar with the provisions of this code and conduct themselves accordingly.

Each charge will be investigated and if the evidence is deemed sufficient and the student found responsible, appropriate sanctions will be implemented. There are two types of sanctions for students who violate the academic honesty policy – academic and administrative. The sanctions are independent of each other and students may be subject to one or both. Academic sanctions are implemented by the instructor (e.g., grade of 0 for assignment, file academic misconduct form in Dean's office.

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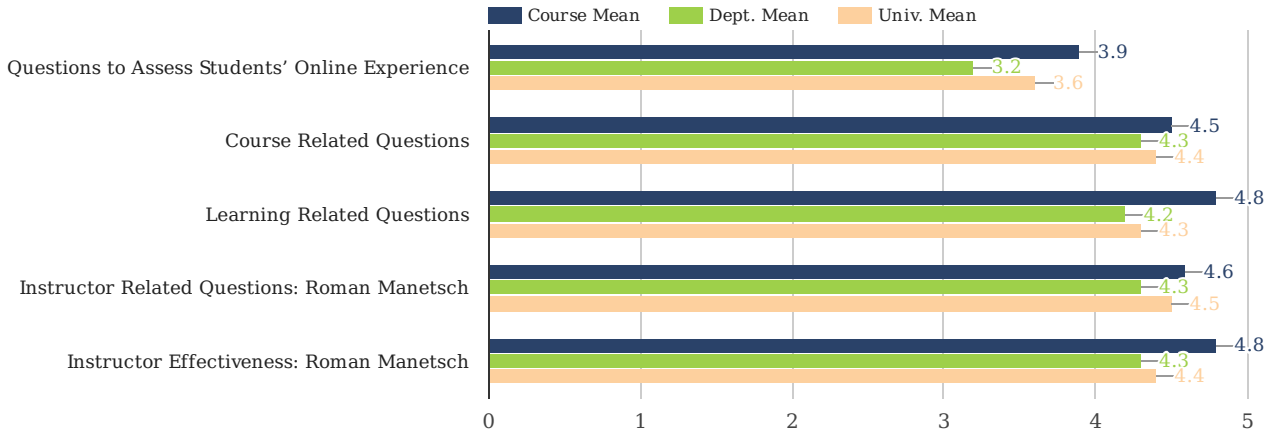
Organic Synthesis 1 (Fall 2022)

Instructor: **Manetsch, Roman**
Section: **01**
Course Title: **Organic Synthesis 1**
Course ID: **10742**
Objectives:

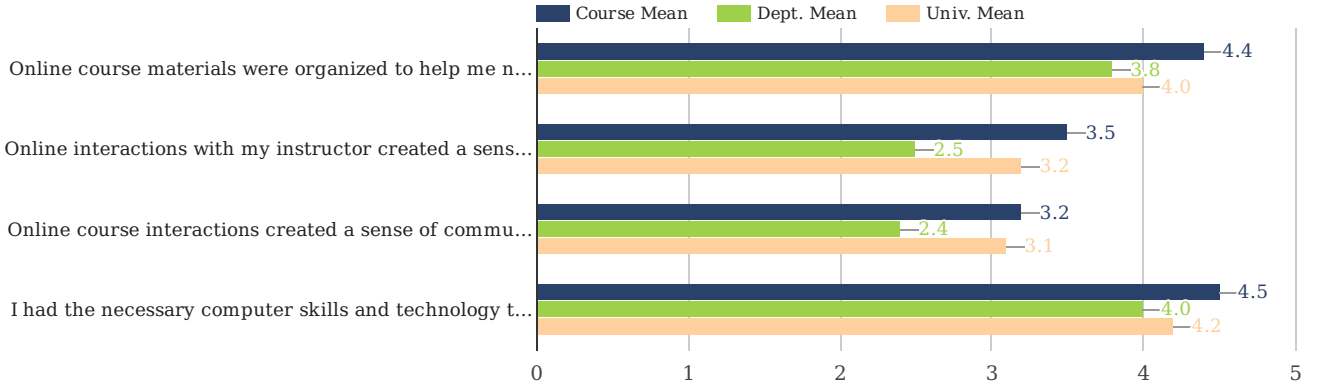
Enrollment: **24**
Responses Incl Declines: **17**
Declines: **0**

Category Summary



Category	Number of Responses	Response Rate	Mean	Dept. Mean	Univ. Mean	Median	Dept. Median	Univ. Median	STDEV
Questions to Assess Students' Online Experience	68	70.8%	3.9	3.2	3.6	5.0	4.0	4.0	1.7
Course Related Questions	34	70.8%	4.5	4.3	4.4	5.0	5.0	5.0	0.6
Learning Related Questions	68	70.8%	4.8	4.2	4.3	5.0	5.0	5.0	0.4
Instructor Related Questions: Roman Manetsch	136	70.8%	4.6	4.3	4.5	5.0	5.0	5.0	0.6
Instructor Effectiveness: Roman Manetsch	17	70.8%	4.8	4.3	4.4	5.0	5.0	5.0	0.4

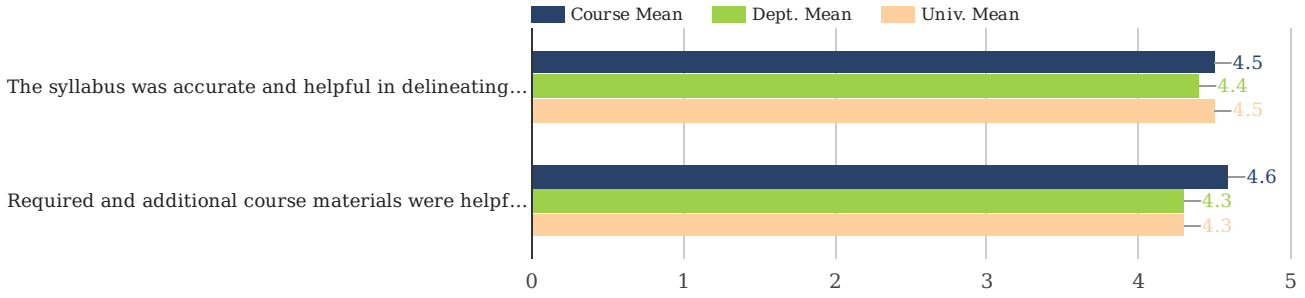
Questions to Assess Students' Online Experience



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
Online course materials were organized to help me navigate through the course week by week.	17	70%	4.4	3.8	4.0	5.0	4.0	5.0
Online interactions with my instructor created a sense of connection in the virtual classroom.	17	70%	3.5	2.5	3.2	4.0	3.0	4.0
Online course interactions created a sense of community and connection to my classmates.	17	70%	3.2	2.4	3.1	3.0	3.0	4.0
I had the necessary computer skills and technology to successfully complete the course.	17	70%	4.5	4.0	4.2	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree; -1:N/A;

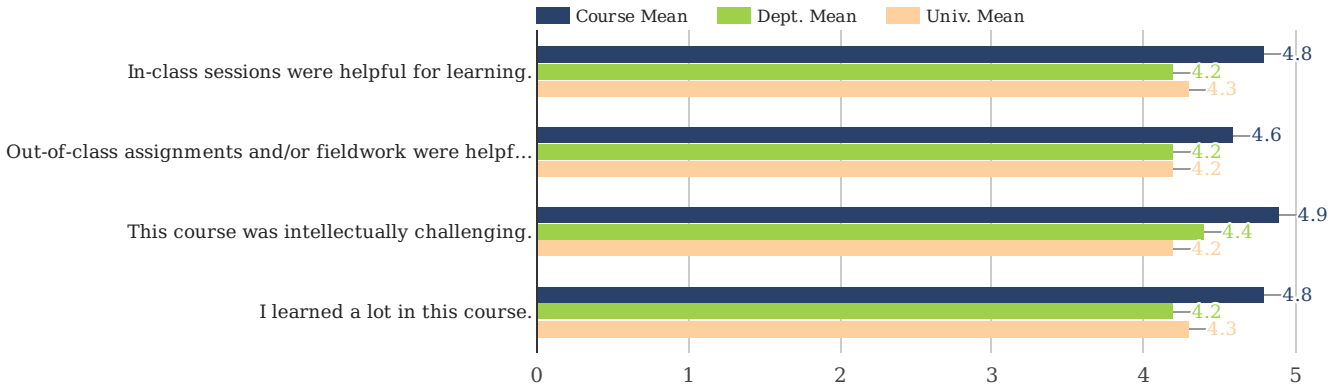
Course Related Questions



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
The syllabus was accurate and helpful in delineating expectations and course outcomes.	17	70%	4.5	4.4	4.5	5.0	5.0	5.0
Required and additional course materials were helpful in achieving course outcomes.	17	70%	4.6	4.3	4.3	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

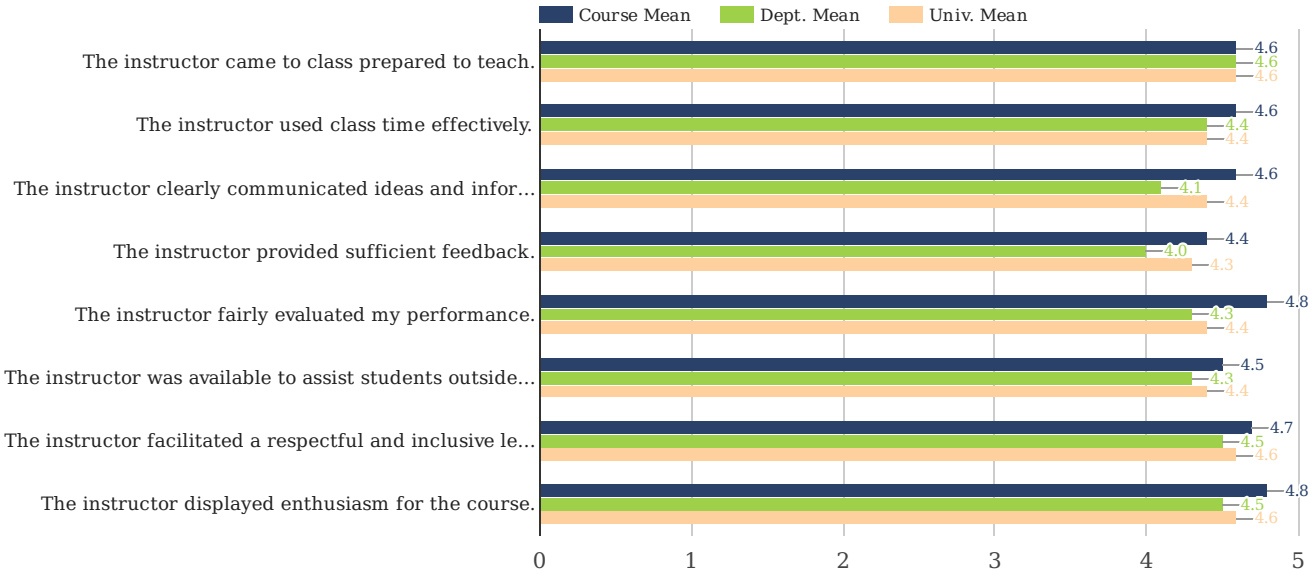
Learning Related Questions



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
In-class sessions were helpful for learning.	17	70%	4.8	4.2	4.3	5.0	5.0	5.0
Out-of-class assignments and/or fieldwork were helpful for learning.	17	70%	4.6	4.2	4.2	5.0	4.0	4.0
This course was intellectually challenging.	17	70%	4.9	4.4	4.2	5.0	5.0	4.0
I learned a lot in this course.	17	70%	4.8	4.2	4.3	5.0	4.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

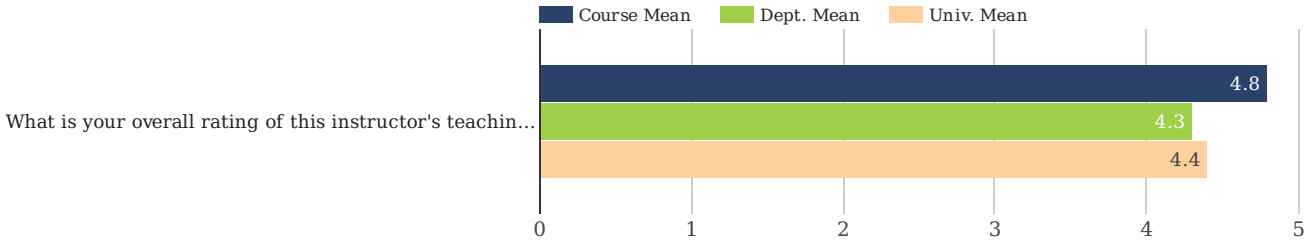
Instructor Related Questions: Roman Manetsch



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
The instructor came to class prepared to teach.	17	70%	4.6	4.6	4.6	5.0	5.0	5.0
The instructor used class time effectively.	17	70%	4.6	4.4	4.4	5.0	5.0	5.0
The instructor clearly communicated ideas and information.	17	70%	4.6	4.1	4.4	5.0	5.0	5.0
The instructor provided sufficient feedback.	17	70%	4.4	4.0	4.3	5.0	4.0	5.0
The instructor fairly evaluated my performance.	17	70%	4.8	4.3	4.4	5.0	5.0	5.0
The instructor was available to assist students outside of class.	17	70%	4.5	4.3	4.4	5.0	5.0	5.0
The instructor facilitated a respectful and inclusive learning environment.	17	70%	4.7	4.5	4.6	5.0	5.0	5.0
The instructor displayed enthusiasm for the course.	17	70%	4.8	4.5	4.6	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

Instructor Effectiveness: Roman Manetsch

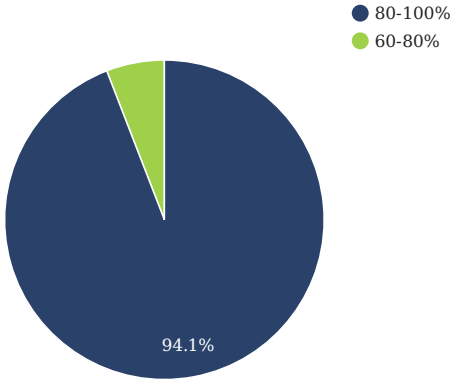


Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
What is your overall rating of this instructor's teaching effectiveness?	17	70%	4.8	4.3	4.4	5.0	5.0	5.0

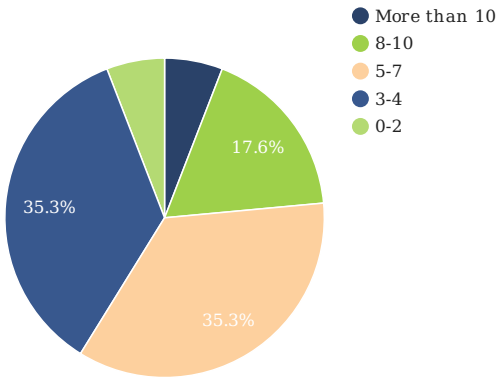
Note: 5:Almost Always Effective; 4:Usually Effective; 3:Sometimes Effective; 2:Rarely Effective; 1:Never Effective;

Demographics

How often did you attend this class both in-person and remotely?



The number of hours per week I devoted to this course outside scheduled class meeting times.



Organic Synthesis 1 (Fall 2022)

Instructor: **Manetsch, Roman**
Subject: **CHEM**
Catalog & Section: **5626 01**
Course ID: **10742**
Objectives:

Enrollment: **24**
Responses Incl Declines: **17**
Declines: **0**

Instructor Related Questions: Roman Manetsch (22 comments)

Q: What were the strengths of this course and/or this instructor?

1	Homework
2	The lenient professor and the practice homework were very well done (they test the essential skill)
3	Dr. Manetsch was a great professor who clearly knows a lot about the topics that he discusses in class and was also very effective at explaining the topics. He considered student input a lot and was always fair to the students. Overall an amazing professor.
4	he had a passion for the learning material and would explain stuff out to the best of his ability
5	Dr. Manetsch really knew the material, answering questions and provoking students to give reasoning for answers rather than just saying it was correct. This lead to the entire class looking at concepts of synthesis more deeply, and understand why things happen instead of just that they did.
6	Professor Manetsch was very enthusiastic about the course material and encouraged questions and participation. This helped keep me engaged in the class.
7	- lots of hw problems for practice in each topic discussed in class - professor answering and having office hours for exams
8	A learning strength of the course is the alignment of all assignments and course work: Learning Modules align with textbook content, to homework, to quizzes.

Q: What could the instructor do to make this course better?

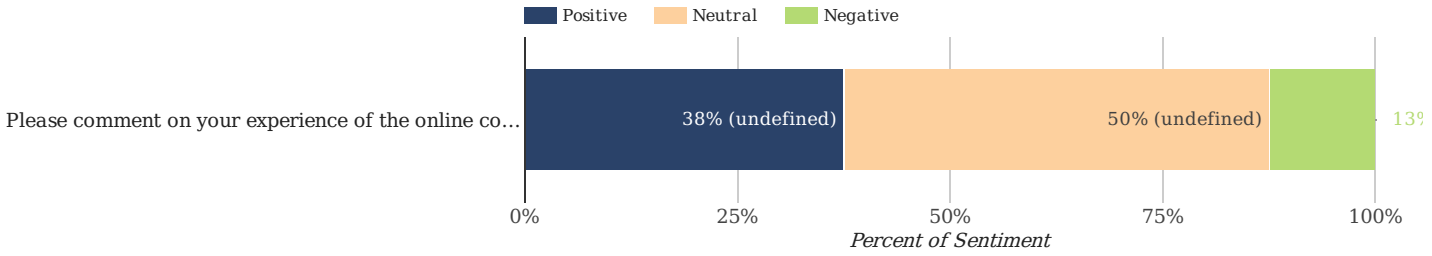
1	May I suggest posting the grades on CANVAS in a timely manner
2	Nothing professor was very well prepared and taught everything well.
3	Nothing I thought his teaching style and flow was great.
4	have more flow with lectures, some stuff he seemed to just jump into instead of transition into the topics
5	I really enjoyed how this course was taught, so I don't know if there was anything I would change.
6	use fewer unclear antecedents. During lecture using words like "this" or "that" without clarifying what they refer to makes it difficult to follow lectures
7	- have different styles of hw and practice exams - post notes online with questions from the textbook to help students who don't understand the lecture
8	Utilize a variety of technology options

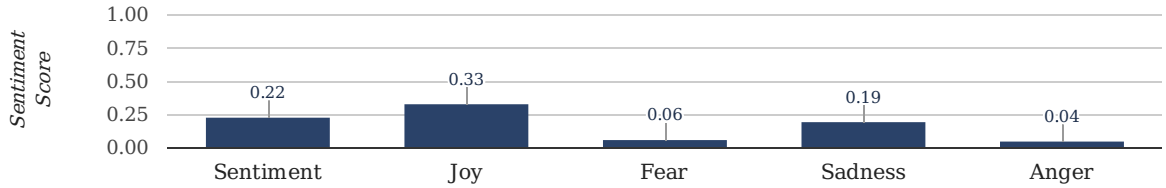
Q: Please expand on the instructor’s strengths and/or areas for improvement in facilitating inclusive learning.

1	Knowledgeable and passionate about organic chemistry!
2	Explained everything thoroughly and provided the expectations very well. Maybe the feedback provided on the exam could be a bit more clear.
3	good at explaining topics but compared to the midterm and final it felt like some of the questions we had received we had not gone over in enough detail in class
4	I felt that it was challenging, but that I learned a lot, and there was fair grading with an emphasis on getting better rather than just getting the points.
5	instructor strength include interacting with the class while teaching different organic chemistry topics areas of improvement will include to have pages of the textbook for some topics not discussed in the course.
6	He responds to emails with questions in a timely matter and always offers his help when needed.

Questions to Assess Students’ Online Experience (8 comments)

Q: Please comment on your experience of the online course environment in the open-ended text box.





1	Great. ★★★★★
2	N/A ★★★☆☆
3	N/A ★★★☆☆
4	There wasn't much of an online environment for this course. ★★★☆☆
5	his notes were easy to follow but a little difficult to read at times when he left the recordings of his notes onliine ★★★☆☆
6	I did not attend virtually for classes, but assignments were easy to upload, and I did not have trouble accessing files. ★☆☆☆☆
7	Online course was very organized with homework and practice questions. Each topic was discussed throughly and the textbook helped with many of the questions. ★★★★★
8	One good thing is that it records all the lectures for reviewing ★★★★★

Student Self-Assessment of their Effort to Achieve Course Outcomes (7 comments)

Q: What I could have done to make this course better for myself.

1	Work hard!
2	N/A
3	Nothing
4	studied more
5	I could have done a few more of the homeworks, even though they were ungraded, just to practice before studying for the exams.
6	Practicing each reaction and mechanism with different reactants and product learn the technique for each reaction and understand how it works and find techniques to remember it.
7	Do more review and preview

NORTHEASTERN UNIVERSITY
Department of Pharmaceutical Sciences
Bouvé College of Health Sciences

Syllabus

Principles of Drug Design (PHSC5400)

FALL 2022

PHSC5400 (CNR#12691)

Instructors:

Prof. Roman Manetsch (Course Coordinator)
Associate Professor of Medicinal Chemistry
- Office: 102 Hurtig Hall
- Tel: 617-373-6316
- Email: r.manetsch@northeastern.edu

Prof. Raymond G. Booth
Professor, Medicinal Chemistry and Pharmacology
- Office: 211B Mugar Hall
- Tel: 617-373-4082
- Email: ra.booth@northeastern.edu

Class Schedule: Fridays, 1:30 PM to 3:30 PM. The course (i.e. lectures) will be taught in person. Some teaching activities may occur asynchronously. The date and exact time for synchronous and asynchronous activities (i.e., quizzes, exams, office hours) will be announced in advance. Changes to the schedule will be announced via Canvas.
Room: Ryder Hall, Room 156
Instructional Methods: Course materials will be made available on Canvas. Lectures will be delivered in person and/or online via Zoom web conferencing. A virtual forum will be available to centralize questions that will be addressed by the instructors during office hours.
Credit Hours: 3 Semester Credit Hours
Prerequisites: B.S. (life or physical sciences major) or concurrent enrollment in B.S.Pharm or B.S. Chemistry (major) program

Course Description: This course aims to provide students with a comprehensive understanding of important aspects of drug discovery and development, focusing on drug design. It begins with the basic organic medicinal chemistry concepts and systematically builds students' skills in lead compound discovery, structure-activity relationship studies, and lead optimization strategies. The students will also grasp the fundamentals of pharmacology, pharmacokinetics, and pharmacodynamics of therapeutic agents relevant to drug-structure optimization. These skills will help graduate students, practicing scientists, and future drug discovery researchers develop a strong foundation in the concepts that govern the multidisciplinary process of drug discovery. The course material is designed to allow students to incrementally increase their knowledge required to identify new, marketable therapeutic agents through lectures and peer-reviewed seminar presentations.

Course Objectives:
After successfully completing this course, the students will be able to

a) plan a justified strategy to identify new lead compounds
b) relate chemical structure to biological activity
c) carry out systematic structure-activity relationship studies and carry out hit-to-lead optimization in an iterative fashion
d) investigate the pharmacokinetic properties of drug molecules and their possible metabolites
e) devise chemical strategies to address solubility problems
f) design drugs with a controlled duration of action (soft drugs versus prodrugs)
g) develop the skills and confidence to present a scientific topic and work as a team

Required Textbooks:

- The Practice of Medicinal Chemistry by Wermuth, Aldos, Raboisson and Rognan, 4th Edition, Elsevier

Additional Textbooks:

- Metabolism, Pharmacokinetics and Toxicity of Functional Groups by Smith and Fox, 7th Edition, RSC Publishing
- Accounts in Drug Discovery – Case Studies in Medicinal Chemistry by J. C. Barrish, P. H. Carter, P. T. W. Cheng, and R. Zahler; RSC Publishing
- Case Studies in Modern Drug Discovery by X. Huang and R. G. Aslanian, Wiley

Case Studies:

Case studies will be a seminar presentation where a student or a group of students give a 15 minutes presentation on a chosen drug. This will be followed by 5 minutes of questions and answers. A panel of judges will include all instructors plus students randomly chosen from class. The rubric and grades for the seminar presentation are discussed earlier. All students MUST attend these presentations.

Term Paper:

The term paper will be a report of 4 pages on the drug presented in the oral presentation (see case studies). Please include the following topics in the report:

- the disease for which this drug is indicated,
- currently available medications for the disease,
- the drug's structure (and IUPAC name),
- its discovery and pharmacology,
- at least two different chemical approaches to synthesize it,
- results from clinical studies (Phase I-IV),
- side effects including black box warning,
- drug-drug interactions.

Deadline for submission of your final term paper: 12/10/2022. Please submit your final term paper by 5:00 PM.

Course Policies:

a. On attendance

Attendance of the lecture and discussion sections is expected. The instructor is not responsible to inform absent students about announcements made during the lectures.

b. On course elements

The following displays the various course elements and their relative weights, from which the letter grade will be calculated. Students must notify the instructor at the beginning of the semester if they plan to use DRC services during the course.

One Exam (30% each)	=	40%
Seminar Presentation*	=	30%
Term Paper	=	30%
Total	=	100%

Important: Students are expected to work on their exams and other assignments on their own. You may not work together with colleagues; you may not talk with anyone about the exam questions or your answers; you may not use any other human resources of any kind. If you have questions about wording or do not understand what is being asked, you should contact the instructor. Working together with someone(s), collaborating in any way with another person via speech, written or other forms of communication, will result in an automatic F.

Plagiarism of the scientific literature is strictly forbidden. It is your responsibility to understand what plagiarism is and how to avoid it. Any use of literature or works of others must be referenced. Failure to reference the literature, copying your answers directly from literature or otherwise using the work of others and portraying it as your own is prohibited. Evidence of plagiarism will result in an automatic F. Evidence of non-original answers will result in an automatic F on the exam.

c. On course grading criteria

Students are expected to take the exam during the scheduled class period. Make-ups will not be permitted. To be excused from taking the exams, the student must provide an acceptable written excuse to the instructor prior to the examination period. If the excuse for the missed examination is justified, the course grade will be based on the remaining presentation and paper.

Students are responsible for finding grading errors on exam. Requests for re-grading must be submitted within one week following return of the examination. No changes in scoring will be accepted later than one week after return of the exam.

Course grades will be determined after reviewing the distribution of grades in the class. **The minimum passing grade (C) will not be lower than 65%.** Students failing the course will be permitted to retake the course during the next semester that it is offered; no challenge or replacement exam will be offered.

A general guide to grade cut-offs is given below:

A	≥ 92%	B-	75-78.9%
A-	86.0-91.9%	C+	72-74.9%
B+	83.0-85.9%	C	65-71.9%
B	79.0-82.9%	F	64.9 and lower

d. On the use of calculators and other electronic devices

Students are permitted to bring *non*-programmable calculators to examinations to aid in performing arithmetic calculations, logarithms, etc. Programmable devices, including calculators, computers, and palm pilots with information storage capability are not permitted during examinations.

e. Academic honesty

Any student found to be committing academic dishonesty at any point in the course may receive an "F" for the course and NU OSCCR will be notified. The minimum sanction for academic dishonesty is a grade of 0% for that assignment; a report of the incident filed with both the Dean's Office in 206 Mugar, and NU OSCCR.

Northeastern University is committed to the principles of intellectual honesty and integrity. All members of the Northeastern University community share the responsibility to bring forward known acts of apparent academic dishonesty. If you witness an act of academic dishonesty in this course, you should report it to the course coordinator.

Students are expected to maintain the highest standards of honesty and integrity according to the Code of Student Conduct at Northeastern University. Please refer to detailed information regarding academic integrity policy (http://www.northeastern.edu/osccr/academic-integrity-policy/) and the Code of Student Conduct (http://www.northeastern.edu/osccr/code-of-student-conduct/). Students are expected to be familiar with the provisions of this code and conduct themselves accordingly.

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Administrative sanctions are those implemented by OSCCR and the NU Student Judicial Hearing Board (e.g., probation, deferred suspension, expulsion). If you have any questions regarding proper attribution of the work of others, contact your professor prior to submitting work for evaluation.

f. On late arrivals and early departures

Late arrivals and early departures from class are extremely disruptive to fellow students and the instructor. Please be on time and avoid the need to leave the room while class is underway! If entering late or leaving early is unavoidable, please do so as quietly and unobtrusively as possible.

g. On cell phones and pagers

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must notify the coordinator at the beginning of the semester if they plan to use DRC services throughout the course. Contact information for the DRC, located at 20 Dodge Hall, is listed on their web link: http://www.northeastern.edu/drc/ or by calling: (617) 373-2675, TTY: Contact DRC via Relay 711, Fax: (617) 373-7800.

The Case Studies Presentation Grading Rubric:

Scale / Order	5 Exceptional	4 Very Good	3 Good	2 Fair	1 Poor
Non-verbal Skills These include Eye contact, body language and poise **Score:**	**D**irect eye contact, and rarely looks at notes. **M**ovements are fluid. **D**isplays confidence.	**G**ood eye contact, and occasionally looks at notes. **G**ood movement. **D**isplays little or no tension.	**S**ome eye contact, and often refers notes. **J**ust enough movements. **M**akes some mistakes and recovers.	**M**inimal eye contact and refers to notes almost all of the time. **V**ery little movement. **H**as trouble recovering from mistakes.	**N**o eye contact and reads from notes at all times. **N**o movement or gestures. **O**bvious tension and mistakes.
Verbal Skills These include Enthusiasm Speaking **Score:**	**S**trong positive expression about the topic. **C**lear voice and excellent pace.	**C**onfident about the topic. **C**lear voice and acceptable pace.	**L**imited confidence about the topic. **V**oice clear and pace good most of the time.	**L**imited confidence about the topic. **V**oice is not clear, and pace is too slow or fast.	**S**hows no confidence in the topic**.** **V**oice is very unclear, and pace is too slow or fast.
GROUP Timing Length of Presentation **Score:**	Within **1** minute of the allotted time	Within **2** minutes of the allotted time	Within **3** minutes of the allotted time	Within **4** minutes of the allotted time	Within **5** minutes of the allotted time.
GROUP Content and Media Subject Knowledge, Organization and Mechanics **Score:**	Abundance of relevant and correct information in clearly related presentation provided in a logical flow.	Good amount of relevant and correct information in logical flow.	Sufficient amount of relevant and correct information, but not always in logical flow.	Insufficient amount of relevant information, with some errors, and rarely with logical flow.	No relevant information, with many errors in content, and no logical flow.
GROUP Use of Media **Score:**	Slides were very well formatted and organized and were without typos.	Slides were well formatted and organized but had a couple of typos.	Slides were adequately formatted and organized and had a couple of typos.	Slides were not well formatted and organized and had multiple typos.	Slides were improperly formatted and were disorganized, with multiple typos.

Class	Date	Instructor // Topic
1	09/09/2022	**Manetsch // Testing of Organic Chemistry Fundamentals Important for Medicinal Chemistry; Introduction to Medicinal Chemistry and Metabolism, Pharmacokinetics and Toxicity of Functional Groups; and Impact of Chemical Building Blocks on ADMET** The first lecture will discuss functional groups, stereochemistry and how functional groups impact interactions between a drug and its molecular target(s). Furthermore, this first lecture will discuss physicochemical properties that impact drug-likeness, drug metabolism, and toxicity. *Reading: Metabolism, Pharmacokinetics and Toxicity (Dennis A. Smith)*
2	09/16/2022	**Manetsch // Lead Compound Discovery Strategies #1** This lecture will cover strategies used in search for new lead compounds: (a) hit or lead finding strategies, high-throughput screening and drug discovery; (b) natural products as pharmaceuticals and source of lead structures, biology- and diversity-oriented synthesis; and (c) in silico screening. *Reading: The Practice of Medicinal Chemistry (Wermuth), chapters 4, 5, and 6*
3	09/23/2022	**Manetsch // Lead Compound Discovery Strategies #2** This lecture will cover strategies used in search for new lead compounds: (a) fragment-based lead discovery. *Reading: The Practice of Medicinal Chemistry (Wermuth), chapter 7.*
4	09/30/2022	**Manetsch // Lead Compound Discovery Strategies #3** This lecture will cover strategies used in search for new lead compounds: (a) isosteric replacements; (b) ring transformations; amd (c) macrocycles. *Reading: The Practice of Medicinal Chemistry (Wermuth), chapters 8, 9, and 10*
5	10/07/2022	**Booth // Functional Groups in Drug–Protein Interactions** This lecture will discuss molecular determinants of interactions between ligand functional groups and proteins (amino acids), emphasizing 3D interactions that lead to inferences of binding pocket structure to inform drug design. *Reading: The Practice of Medicinal Chemistry (Wermuth), chapters 14 and 15*
6	10/14/2022	**Booth // Drug Design and Systems Pharmacology** This lecture will discuss designing drug-like molecules with regard to cell, organ, and systems targeting, drug metabolism, and potential toxicity. *Reading: The Practice of Medicinal Chemistry (Wermuth), chapters 17, 18, and 19*
7	10/21/2022	**Manetsch // Advanced Lead Discovery and Optimization Strategies #1** This lecture will discuss physiological aspects determining the pharmacokinetic properties of the drugs: (a) pharmacokinetic properties of drugs; (b) biotransformations and their enzymes; and (c) toxic metabolites. *Reading: The Practice of Medicinal Chemistry (Wermuth), chapters 23, 24, and 25*

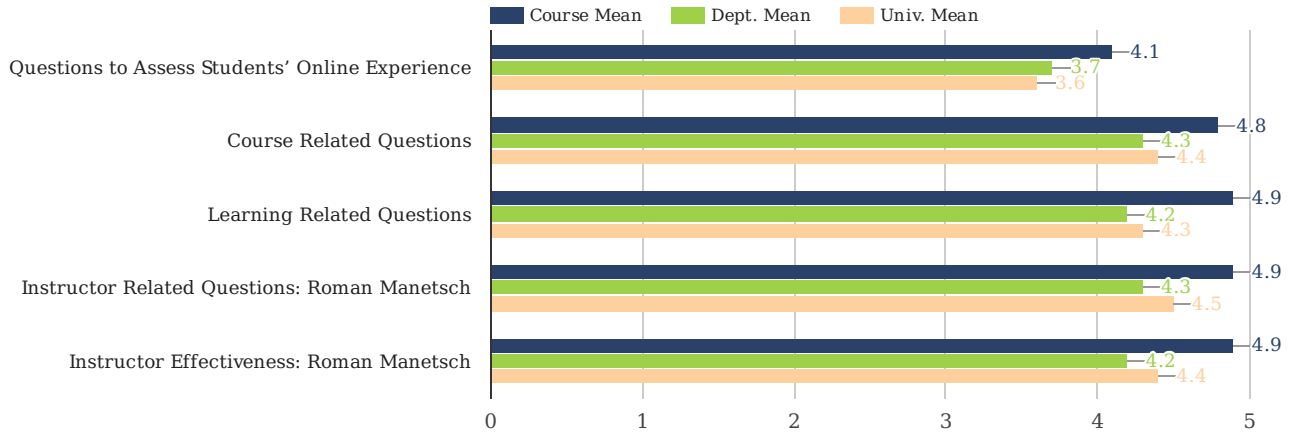
Class	Date	Instructor // Topic
8	10/28/2022	**Manetsch // Advanced Lead Discovery and Optimization Strategies #2** This topic will cover different strategies for enhancing oral bioavailability and brain penetration: (a) drug-transport mechanisms and their impact on disposition and effects of drugs; (b) oral bioavailability and brain penetration; and (c) prodrugs. *Reading: The Practice of Medicinal Chemistry (Wermuth), chapters 26, 27, and 28*
9	11/04/2022	**Manetsch and Booth // Exam** covering lectures 1-8
10	11/11/2022	**Veterans Day // No Class**
11	11/18/2022	**Students #1-7, Manetsch, Booth // Case Studies in Drug Discovery and Development #1** *Reading: Accounts in Drug Discovery – Case Studies in Medicinal Chemistry (RSC Publishing); Case Studies in Modern Drug Discovery*
	11/25/2022	**Thanksgiving Break**
12	12/02/2022	**Students #8-14, Manetsch, Booth // Case Studies in Drug Discovery and Development #1** *Reading: Accounts in Drug Discovery – Case Studies in Medicinal Chemistry (RSC Publishing); Case Studies in Modern Drug Discovery*
13	12/09/2022	**Students #15-21, Manetsch, Booth // Case Studies in Drug Discovery and Development #2** *Reading: Accounts in Drug Discovery – Case Studies in Medicinal Chemistry (RSC Publishing); Case Studies in Modern Drug Discovery*

Principles of Drug Design (Fall 2022)

Instructor: **Manetsch, Roman**
Section: **01**
Course Title: **Principles of Drug Design**
Course ID: **12691**
Objectives:

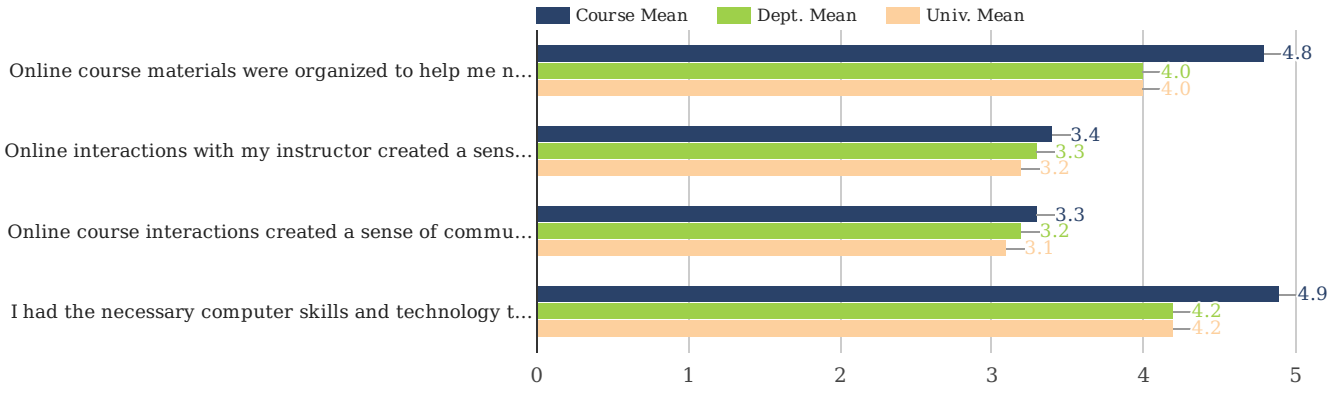
Enrollment: **17**
Responses Incl Declines: **12**
Declines: **0**

Category Summary



Category	Number of Responses	Response Rate	Mean	Dept. Mean	Univ. Mean	Median	Dept. Median	Univ. Median	STDEV
Questions to Assess Students' Online Experience	48	70.6%	4.1	3.7	3.6	5.0	4.0	4.0	1.7
Course Related Questions	24	70.6%	4.8	4.3	4.4	5.0	4.5	5.0	0.4
Learning Related Questions	48	70.6%	4.9	4.2	4.3	5.0	4.0	5.0	0.3
Instructor Related Questions: Roman Manetsch	96	70.6%	4.9	4.3	4.5	5.0	5.0	5.0	0.4
Instructor Effectiveness: Roman Manetsch	12	70.6%	4.9	4.2	4.4	5.0	4.0	5.0	0.3

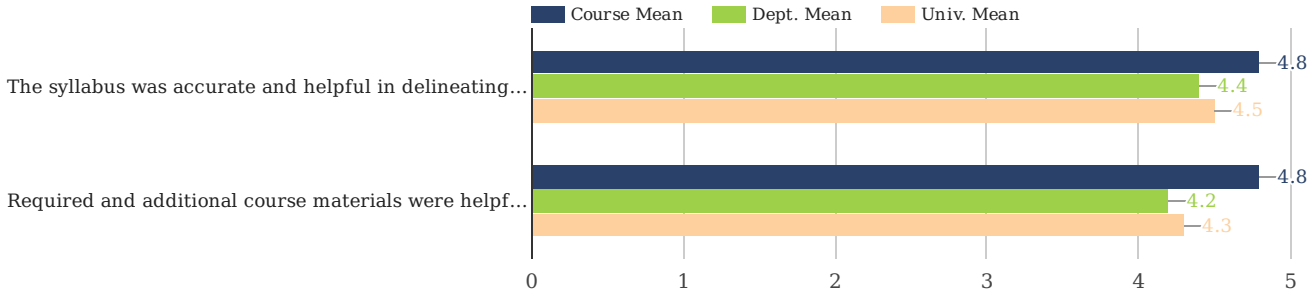
Questions to Assess Students' Online Experience



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
Online course materials were organized to help me navigate through the course week by week.	12	70%	4.8	4.0	4.0	5.0	4.0	5.0
Online interactions with my instructor created a sense of connection in the virtual classroom.	12	70%	3.4	3.3	3.2	4.5	4.0	4.0
Online course interactions created a sense of community and connection to my classmates.	12	70%	3.3	3.2	3.1	4.5	4.0	4.0
I had the necessary computer skills and technology to successfully complete the course.	12	70%	4.9	4.2	4.2	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree; -1:N/A;

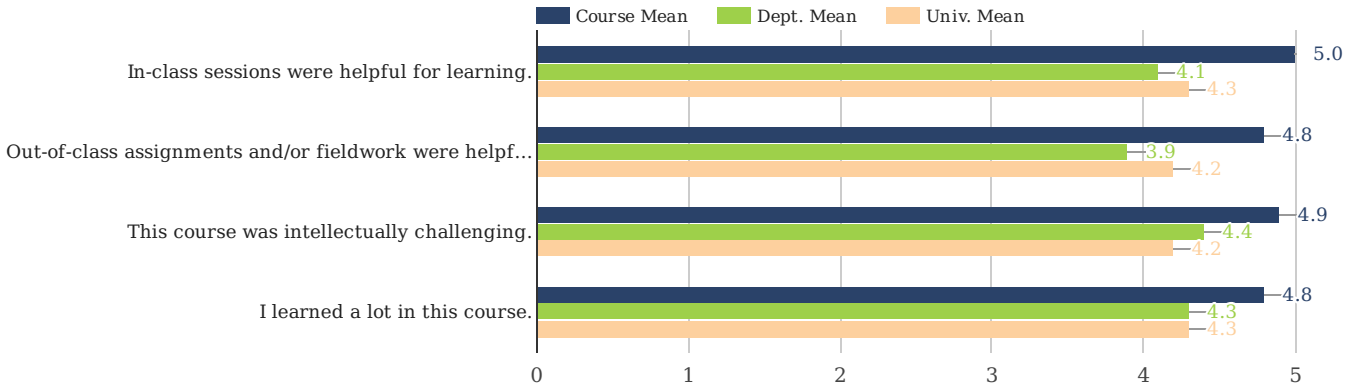
Course Related Questions



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
The syllabus was accurate and helpful in delineating expectations and course outcomes.	12	70%	4.8	4.4	4.5	5.0	5.0	5.0
Required and additional course materials were helpful in achieving course outcomes.	12	70%	4.8	4.2	4.3	5.0	4.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

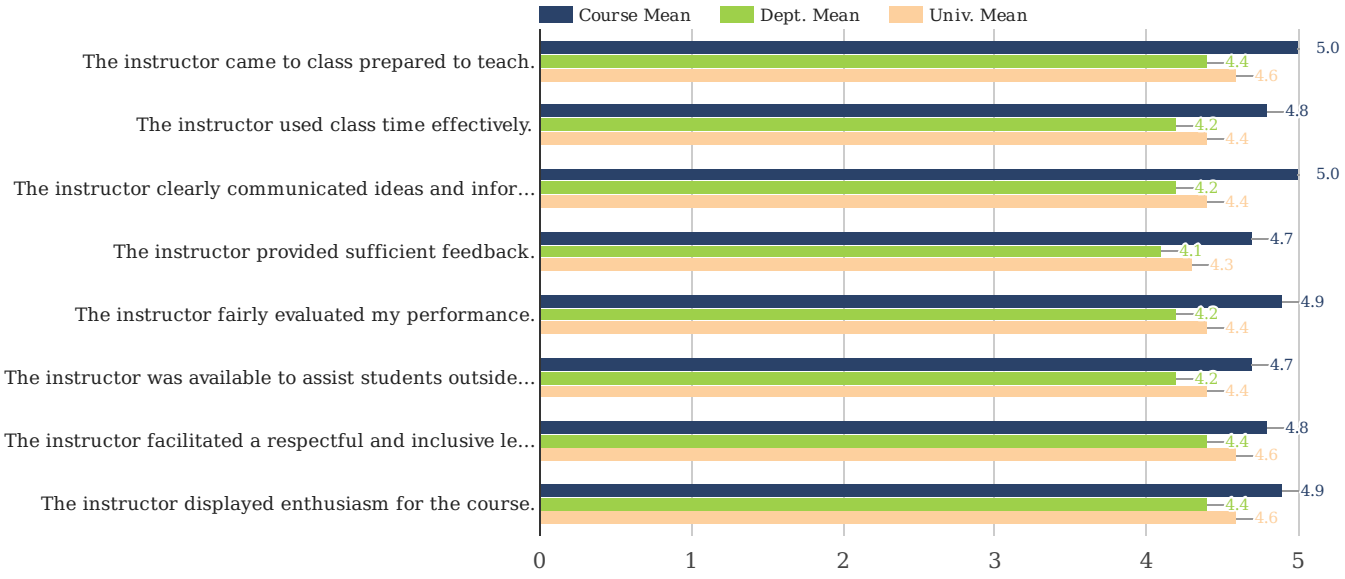
Learning Related Questions



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
In-class sessions were helpful for learning.	12	70%	5.0	4.1	4.3	5.0	4.0	5.0
Out-of-class assignments and/or fieldwork were helpful for learning.	12	70%	4.8	3.9	4.2	5.0	4.0	4.0
This course was intellectually challenging.	12	70%	4.9	4.4	4.2	5.0	5.0	4.0
I learned a lot in this course.	12	70%	4.8	4.3	4.3	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

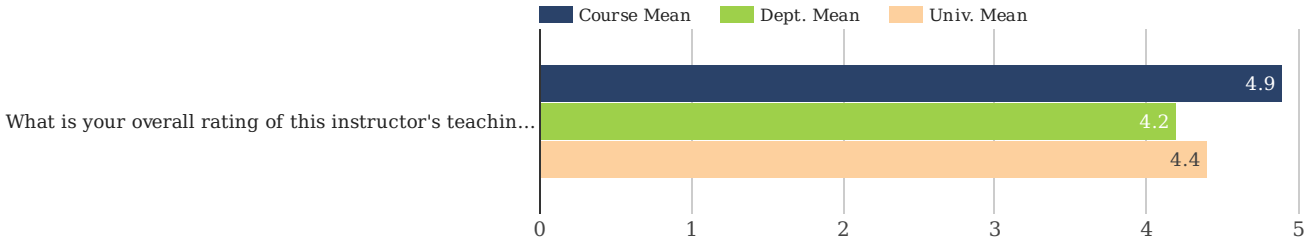
Instructor Related Questions: Roman Manetsch



Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
The instructor came to class prepared to teach.	12	70%	5.0	4.4	4.6	5.0	5.0	5.0
The instructor used class time effectively.	12	70%	4.8	4.2	4.4	5.0	5.0	5.0
The instructor clearly communicated ideas and information.	12	70%	5.0	4.2	4.4	5.0	5.0	5.0
The instructor provided sufficient feedback.	12	70%	4.7	4.1	4.3	5.0	4.0	5.0
The instructor fairly evaluated my performance.	12	70%	4.9	4.2	4.4	5.0	5.0	5.0
The instructor was available to assist students outside of class.	12	70%	4.7	4.2	4.4	5.0	5.0	5.0
The instructor facilitated a respectful and inclusive learning environment.	12	70%	4.8	4.4	4.6	5.0	5.0	5.0
The instructor displayed enthusiasm for the course.	12	70%	4.9	4.4	4.6	5.0	5.0	5.0

Note: 5:Strongly Agree; 4:Agree; 3:Neutral; 2:Disagree; 1:Strongly Disagree;

Instructor Effectiveness: Roman Manetsch

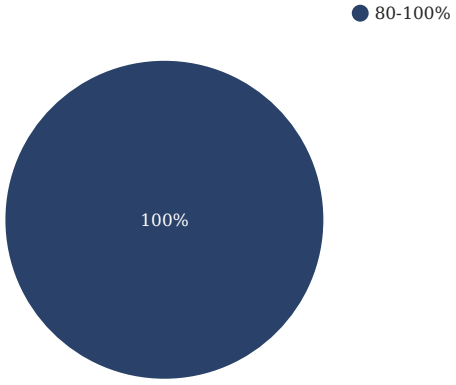


Question	Number of Responses	Response Rate	Course Mean	Dept. Mean	Univ. Mean	Course Median	Dept. Median	Univ. Median
What is your overall rating of this instructor's teaching effectiveness?	12	70%	4.9	4.2	4.4	5.0	4.0	5.0

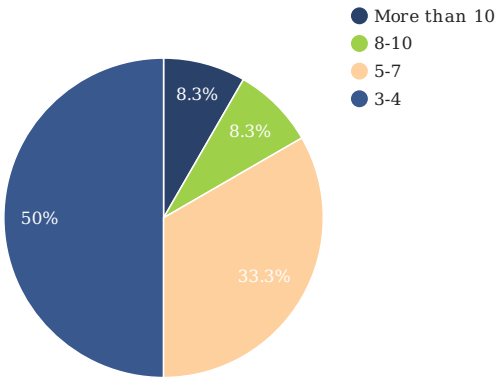
Note: 5:Almost Always Effective; 4:Usually Effective; 3:Sometimes Effective; 2:Rarely Effective; 1:Never Effective;

Demographics

How often did you attend this class both in-person and remotely?



The number of hours per week I devoted to this course outside scheduled class meeting times.



Principles of Drug Design (Fall 2022)

Instructor: **Manetsch, Roman**
Subject: **PHSC**
Catalog & Section: **5400 01**
Course ID: **12691**
Objectives:

Enrollment: **17**
Responses Incl Declines: **12**
Declines: **0**

Instructor Related Questions: Roman Manetsch (9 comments)

Q: What were the strengths of this course and/or this instructor?

1 This course had a significant amount of relatively challenging content, and both professors did a good job presenting the information in digestible ways, and asking if students had any questions along the way.

2 He was very instrumental in my understanding the basic concepts of this course, He was extremely patient.

3 had the extensive knowledge of their area of what they taught

4 This course was very informative and I learned a lot of new things. The instructor is very good at incorporating many concepts in an approachable manner.

Q: What could the instructor do to make this course better?

1 We were not able to go over our tests, which would've been nice to understand what content we didn't understand and address it.

2 More learning of course related materials and questions, it sharpens your mind.

3 even though it made it easier for me personally, not leave the grades up to just a final, a paper and a presentation, maybe add a midterm

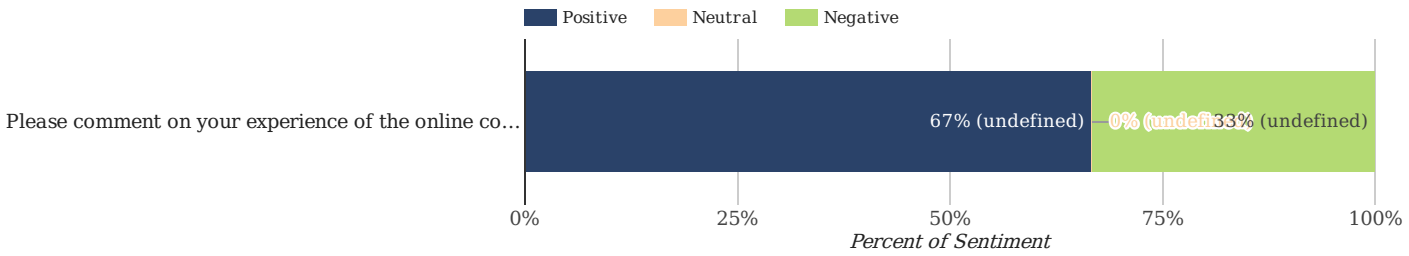
Q: Please expand on the instructor's strengths and/or areas for improvement in facilitating inclusive learning.

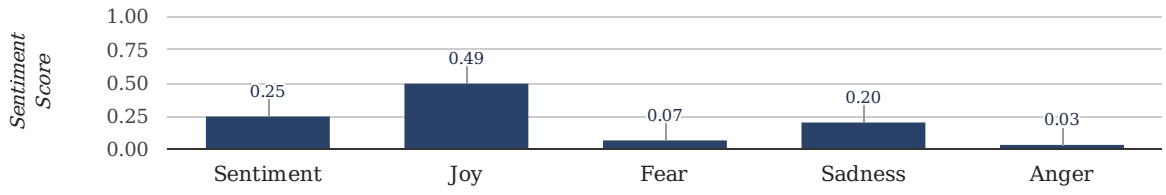
1 I took the class fully in person, so this didn't directly impact me, however, I did notice that sometimes there were issues with the Zoom meetings and recordings for the class, so if a student were taking the class fully online they could have a worse learning experience.

2 could also give a HW sheet to help further understanding of course material

Questions to Assess Students' Online Experience (3 comments)

Q: Please comment on your experience of the online course environment in the open-ended text box.





1 I attended the class fully in person, so I cannot fully speak to the experience of taking the course online. ★★★★☆

2 I enjoyed every part of this class it was an eye opener ★★★★★

3 only real online material was recorded lectures which weren't the instructors faults it was the room we were in ★★☆☆☆

Student Self-Assessment of their Effort to Achieve Course Outcomes (4 comments)

Q: What I could have done to make this course better for myself.

1	I could've done a better job of not procrastinating on the major assignment in the class.
2	more reading and understanding makes you proficient in this course
3	studied more, worked more diligently
4	Practiced more basic organic chem prior to taking the class

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May 3, 2022

Peer Teaching Review of Dr. Roman Manetsch, tenured Associate Professor in the Department of Chemistry and Chemical Biology, Department of Pharmaceutical Sciences, and Center for Drug Discovery

This memo summarizes my review of Dr. Roman Manetsch's teaching in the Department of Chemistry and Chemical Biology as well as Department of Pharmaceutical Sciences. The courses reviewed include CHEM5626 (Organic Synthesis 1) and PHSC5400 (Principles of Drug Design).

I have known Roman since about 2014 when I served on a search committee under the auspices of the Northeastern University Provost Office to recruit faculty research fellows into the Center for Drug Discovery (jointly administered by the College of Science and Bouve College of Health Sciences as well as Provost Office) in association with tenure stream 50-50 joint appointments in the Department of Chemistry and Chemical Biology (tenure locus for Dr. Manetsch) and Pharmaceutical Sciences. Based on Dr. Manetsch's teaching, research and service portfolios, I enthusiastically supported his hire. As a colleague who enjoys working with Roman, I have followed and supported his professional activities at Northeastern. In my view, his performance in all areas has been outstanding. This review focuses on teaching.

CHEM5626 (Organic Synthesis 1, 3SH): I attended several classes during Fall 2021. Dr. Manetsch ran the class in accordance with the Northeastern hybrid model developed in the response to covid. I attended via Teams along with several students while Roman conducted the class in-person on campus, which was attended by several other students. I was given access to the Canvas page for the course.

The Canvas page was set up superbly and included all course materials. For example, the CHEM5626 syllabus as well as modules set-up for lecture presentation slides, homework assignments, solutions for the homework assignments, and practice exams. In addition to homework assignments, there were a midterm and final exam. There were also posted several publications from the current literature on various topics, e.g., proline-catalyzed asymmetric aldol reactions. The text was/is Francis A. Carey, Richard J. Sundberg, *Advanced Organic Chemistry, Part B: Reactions and Synthesis*, 5th edition; Springer, 2007.

The lecture topics cited the corresponding material in the text. Lecture topics included the standard subject matter of advanced organic chemistry, e.g., reactions involving alkylations, carbon nucleophiles, and cycloaddition. There was also discussion of organometallic compounds, reactions involving reduction of carbon-carbon bonds, carbonyl groups, and other functional groups. Carbocations, carbenes, and radicals also were discussed. All in all, the theory and practice of organic chemistry toward realizing synthesis of novel chemical entities was covered efficiently and Roman's teaching was effective, in my view.

It is important to mention here that the teaching effectiveness was no accident—Roman clearly prepared for his lectures and provided materials to help students understand the theory and practice of synthetic organic chemistry. Many of the applications were aimed at medicinal chemistry. Moreover, Roman practiced a successful version of the Socratic method—constantly questioning students and analyzing their answers to provoke further discussion. There was an easy and effective rapport between the instructor and the students. Many of the PhD students in my lab have taken Roman's course and I can vouch for its effectiveness.

PHSC5400 (Principles of Drug Design, 3SH): I teach a couple of 2-hour lectures in this fall semester course while Roman teaches the rest. We both teach the intensive presentations section that spans 2-3 2-hour lecture periods. There is a midterm and final exam in addition to a paper associated with the student's presentation.

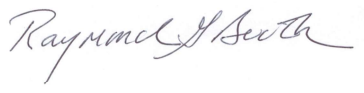
Roman takes primary responsibility for setting-up the Canvas page for the course, which is done in excellent organized fashion. The text is The Practice of Medicinal Chemistry by Wermuth, Aldos, Raboisson and Rognan, 4th Edition, Elsevier. The lectures cite corresponding material in the text. Lecture topics include lead compound discovery and optimization strategies with respect to absorption, distribution, metabolism, elimination and toxicology (ADMET), interactions between drug ligands and drug receptors, and systems pharmacology relative to metabolism of drug.

The class is taught using the hybrid model with an emphasis on student attendance, given there is large variation in student preparedness for the course (students are in various BS programs, PharmD program, various MS and PhD programs in the Colleges Science and Health Sciences). Roman is successful at engaging students despite their various academic backgrounds. Again, after some introductory lessons, Roman proceed with a Socratic style. Despite the difficulties of virtual attendance and shyness from students who do not have strong backgrounds in organic chemistry, Roman is successful to engage and lead the discussions.

It is a pleasure to work with Roman in Drug Design. We both look forward to the presentations section wherein students present case studies on development of a specific drug (usually, FDA approved within the last 5- years) and write a term paper on the same covering the disease for which this drug is indicated, currently available medications for the disease, discovery and pharmacology, synthesis results from clinical studies. In summary, I enjoy working with Roman in this class—he is an effective, enthusiastic partner who is highly valued by myself and the PhD students in my lab. This course is required for MS and PhD Medicinal Chemistry and Drug Discovery students and feedback from the students is consistently positive on the Trace evaluations.

In summary, I find Dr. Manetsch's teaching portfolio and classroom effectiveness to be outstanding—I am pleased to work with him, as are my PhD students.

Respectively submitted.



Raymond G Booth, PhD
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