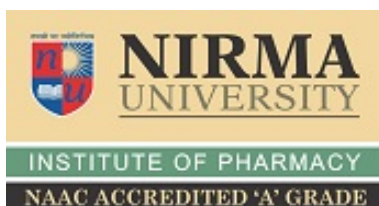


USC School of Pharmacy



PSCI 599: Special Topics: International Pharmacy: USC-Nirma Collaboration

2 units

Spring 2021—Mon—7:00 AM-10:00 AM

Location: Zoom- class sessions linked in Bb

Course Coordinator(s):

Terry Church: tdchurch@usc.edu
Office: CHP 140 Phone: (323) 442-0241Ext.

Ian Haworth: ihaworth@usc.edu
Office: PSC 304bb Phone: (323) 442-3310Ext.

Rory Kim: rocallag@usc.edu
Office: SRH 306 Phone: (323) 442-2777

Office Hours:

By appointment

Instructors:

Niyati Acharya: niyati.acharya@nirmauni.ac.in
Shital Butani: shital.butani@nirmauni.ac.in
Manjunath Ghatе: manjunath.ghate@nirmauni.ac.in
Tejal Mehta: tejal.shah@nirmauni.ac.in
Noam Morningstar-Kywi: nmorning@usc.edu
Shital Panchal: shital.panchal@nirmauni.ac.in
Bhoomika Patel: bgoyal@nirmauni.ac.in
Bhumika Patel: bhumika.patel@nirmauni.ac.in
Mayur Patel: mayurpatel@nirmauni.ac.in
Rajvi Patel: rajvi.patel@nirmauni.ac.in
Snehal Patel: snehal.patel@nirmauni.ac.in
Bhagawati Saxena: bhagawati.saxena@nirmauni.ac.in
Jigar Shah: jigar.shah@nirmauni.ac.in
Jigna Shah: jigna.shah@nirmauni.ac.in
Nagja Tripathi: nagja.tripathi@nirmauni.ac.in

IT Help:

Blackboard is the Learning Management System (LMS) used at the USC School of Pharmacy. For 24/7 help with Blackboard:

- Call (213) 740-5555 and choose Option 2.
- Send an e-mail to blackboard@usc.edu.
- Visit USC's Blackboard Online Help site for how-to videos and guides.
- Access additional Blackboard training videos on Lynda at <http://www.usc.edu/lynda>.
- **Zoom and Panopto may be used for lecture capture and delivery, Zoom and Poll Everywhere may be used as an audience response system, and Blackboard and ExamSoft may be used to administer quizzes and examinations.**
- For help with Zoom, visit <https://itservices.usc.edu/zoom/>.
- For help with Panopto, call the 24/7 Panopto support team at (855) 765-2341 or e-mail support@panopto.com

- For help with ExamSoft, call the 24/7 ExamSoft support team at (866) 429-8889, e-mail support@examsoft.com, or visit <https://learn.examsoft.com/about/examsoft-support>.
- You may also visit our Learning Environments Technical Support Specialists in PSC 102, M-F from 8:00 AM-4:00 PM, call (323) 442-0002, or e-mail pharmit@usc.edu.
- **For all other technology-related questions, call USC Information Technology Services at (213) 740-5555.**

Course Description

This course will provide an opportunity to collaborate with international colleagues through an in depth study of the treatment of Type 2 Diabetes. The course will explore the clinical therapeutics for the treatment of Type 2 Diabetes through a variety of diverse perspectives including drug mechanisms of action, pharmacology, treatment guidelines in the United States and India, natural products, regulatory issues, pharmacoeconomics, and future directions for therapeutic development in the pharmaceutical industry. This course will help students develop a deeper understanding of the chemical properties of drugs. Students will explore how this understanding translates into the care of individual patients. Furthermore, students will be engaged in exploring global perspectives in diabetes drug development and treatment. Faculty will illustrate comparisons of pharmaceutical industry, treatment guidelines, and pharmacist roles in the United States and India.

Learning Objectives

Course learning objectives

- Explain the factors that influence absorption, distribution, metabolism, and elimination of Type 2 Diabetes drugs
- Explain the mechanisms of action of common antidiabetic medications
- Evaluate the basis of drug-drug interactions from both clinical and scientific perspectives
- Describe roles of pharmacists in the management of Type 2 DM in the United States and India
- Describe the evidence for the use of natural products in the treatment of Type 2 Diabetes
- Compare and contrast clinical guidelines for the treatment of Type 2 Diabetes from the United States and India
- Select appropriate drug therapy for the treatment of Type 2 Diabetes
- Design treatment plans for patients with Type 2 Diabetes including drug choice, treatment goals, and pharmacoeconomic considerations
- Compare and contrast the regulatory requirements for the pharmaceutical industry in the United States and India
- Describe the design and development for new technologies in drug delivery

Course Notes

This course will include several group projects. Students will be expected to work on group projects inside and outside of class. Attendance in live class sessions is required to facilitate group work and engagement across disciplines. Due to the time difference with our international partners in India, this class will be delivered in the evening in California.

Guest lecturers from Nirma University will serve as content experts for a portion of the course sessions. Global perspectives will be explored through engagement with students and faculty from Nirma University. This course is open to Masters and PharmD students in the USC School of Pharmacy. International and interprofessional interaction will be facilitated throughout all class sessions and projects.

Required Readings and Supplementary Materials

- Will be posted in Bb as needed

Description and Assessment of Assignments

The breakdown of the course assessments can be found under "Grading breakdown and scale". Students will be assessed individually through engagement in in-class activities and reflections and in groups through presentations and a quiz bowl session.

In-class activities: Engagement in in-class group work, informal presenting, polling/quizzes, and other in-class work will account for 21% of the course grade.

Group projects/presentations: There will be 2 group presentations bringing together topics from different sessions in the course. Small groups will prepare and present their work. Each presentation will account for 20% of the course grade.

Quiz Bowl: Students will submit questions about course material which will be used in a Quiz Bowl style session in Kahoot. Students will be responsible for explaining the answers to their submitted questions. Small groups will compete for the top score. This will account for 19% of the course grade.

Reflection: Students will submit a reflection on their experience in the course including the perceived impact of their interaction with international faculty and colleagues. This will account for 20% of the course grade.

Methods

Teaching Methods

Before Event

- Assigned reading/writing (texts)
- Assigned reading (journal or papers)

During Event

- Classroom lecture
- Small group discussion
- Group activity
- Interdisciplinary activity
- Student presentation
- Team based learning
- Polling questions

Not Associated with an Event

- Group project
- Interprofessional

Assessment Methods

In Class

- Oral presentation
- Small group evaluation

Longer term

- Reflective writing
- Group assignment

Grading Breakdown

| Assignment | Percent |
|-------------------------------|---------|
| Weekly assignments (7 x 3%) | 21 |
| Presentations (2 x 20%) | 40 |
| Reflection on global learning | 20 |
| Quiz Bowl | 19 |

Grading Scale

| | |
|----|--------------|
| A | 95-100 |
| A- | 90-94 |
| B+ | 87-89 |
| B | 83-86 |
| B- | 80-82 |
| C+ | 77-79 |
| C | 73-76 |
| C- | 70-72 |
| D+ | 67-69 |
| D | 63-66 |
| D- | 60-62 |
| F | 59 and below |

Additional Policies

Policy Regarding Missed Examinations

The policy for this course will follow the policy contained within the Academic Policies and Procedures section of the PharmD/Graduate Student Handbook located on the [USC School of Pharmacy Intranet](#). Students who miss an examination are referred to this policy.

Policy Regarding Assignments and Examinations

The following actions are all violations of academic integrity and subject to disciplinary action.

- Any use or attempted use of external assistance in the completion of an academic assignment and/or during an examination, or any behavior that defeats the intent of an examination or other classwork or assignment, unless expressly permitted by the instructor.
- The following are examples of unacceptable behaviors: communicating with fellow students during an exam, copying or attempting to copy material from another student's exam; allowing another student to copy from an exam or assignment; possession or use of unauthorized notes, calculator, or other materials during exams and/or unauthorized removal of exam materials.
- Additional examples of academic misconduct can be found in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b/.

Technological Requirements and Software Updates

Students may be required to bring an internet-enabled device with browser capabilities, such as a cell phone, tablet, or laptop to class. During class time, it is expected that students will use their devices only to participate in activities guided by the instructor. Use of devices for other purposes is not permitted during class time.

The USC School of Pharmacy recommends that students purchase a computer that meets, at minimum, the "medium" level hardware requirements that are also recommended for faculty and staff:

<https://itservices.usc.edu/recommendations/>.

Students who use Zoom should be running the latest version of Zoom available at <https://zoom.us/download>.

Students who use ExamSoft will also be required to have the latest version of Examplify installed on their laptops at all times compatible with their operating system. Occasional updates to the software may be asked of you throughout the year. It is your responsibility to read your USC e-mails regarding Examplify and follow the instructions as listed.

Policy on Learning & Assessment Feedback (LAF)

Feedback on examinations will be provided using the following methods. Please indicate which method(s) you will use in the course.

- No examinations in this course

Learning Experience Evaluation Notes:

Time will be set aside for the completion of the learning experience evaluation.

University Policy on Absences

University policy grants students excused absences from class for observance of religious holy days. Faculty are asked to be responsive to requests when students contact them IN ADVANCE to request such an excused absence. The student should be given an opportunity to make up missed work because of religious observance. Students are advised to scan their syllabi at the beginning of each course to detect potential conflicts with their religious observances. Please note that this applies only to the sort of holy day that necessitates absence from class and/or whose religious requirements clearly conflict with aspects of academic performance.

School of Pharmacy Policy for Written Assignments Regarding Citation Style

All written assignments in the course should use the uniform style of the School of Pharmacy for formatting in-text citations and reference lists. This style corresponds to the AMA (American Medical Association) format and can be found through this following guide <https://libguides.usc.edu/ama11> and handout https://libguides.usc.edu/ld.php?content_id=54130825. The complete AMA Manual of Style is also available as an e-book at tinyurl.com/y9oqj4ht.

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

Campus Support & Intervention - (213) 821-4710

campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.

About Your Instructor(s)

Dr. Rory Kim is an Assistant Professor of Clinical Pharmacy. She received her PharmD from the University of Kansas. She completed a post-graduate PGY1 Pharmacy Residency in Ambulatory Care and a Fellowship in Ambulatory Care and Academia at the University of Southern California School of Pharmacy. She has a Master's of Academic Medicine degree from USC Keck School of Medicine. She is a Board Certified Ambulatory Care Pharmacist (BCACP). She is the director of the PharmD Scholarly Project, the co-director of the International Summer Program. She practices pharmacy in an interprofessional diabetes clinic at the LAC+USC medical center.

Dr. Ian Haworth is an Associate Professor in Pharmacology & Pharmaceutical Sciences. He received his Ph.D. in Physical Organic Chemistry from the University of Liverpool, United Kingdom. His research interests lie at the interface of chemistry, biochemistry and computer sciences, with the goal of prediction of molecular structure and

intermolecular association with inclusion of solvation. Dr. Haworth's laboratory has published over 100 articles on applications of this work to drug-protein interactions, DNA and RNA folding, and protein structure determination using experimental constraints. Dr. Haworth is also interested in utilization of computational methods in education, including new approaches to curriculum mapping and assessment.

Summary of Course Schedule

| Date | Lecturer | Event |
|---------------------------------|--|---|
| Mon 01/04/21 07:00a - 10:00a | Rory Kim Ian Haworth Shital Panchal | Introductory Session |
| Mon 01/11/21 07:00a - 10:00a | Rory Kim Ian Haworth Noam Morningstar- Kywi | Session 1: T2DM Drugs - Mechanisms of Action |
| Mon 01/18/21 07:00a - 10:00a | Rory Kim Jigna Shah | Session 2: T2DM Treatment Guidelines (US/India) |
| Mon 01/25/21 07:00a - 10:00a | Rory Kim Ian Haworth Manjunath Ghate | Project 1 Presentations |
| Mon 02/01/21 07:00a - 10:00a | Rory Kim Ian Haworth | Session 3: ADME and DDIs of T2DM Drugs: Science and Clinical Perspectives |
| Mon 02/08/21 07:00a - 10:00a | Rory Kim Shital Panchal Snehal Patel | Session 4: T2DM Roles for Pharmacists (US/India) |
| Mon 02/15/21 07:00a - 10:00a | Manjunath Ghate Niyati Acharya Nagja Tripathi Bhumika Patel | Session 5: Natural products for T2DM |
| Mon 02/22/21 07:00a - 10:00a | Rory Kim Ian Haworth Manjunath Ghate | Project 2 Presentations |
| Mon 03/01/21 07:00a - 10:00a | Terry Church Bhoomika Patel Rajvi Patel Bhagawati Saxena | Session 6: Regulatory and pharmacoeconomic considerations |
| Mon 03/08/21 07:00a - 10:00a | Tejal Mehta Shital Butani Jigar Shah Mayur Patel | Session 7: Future drug delivery and industrial application |
| Mon 03/15/21 07:00a - 10:00a | Rory Kim Ian Haworth Terry Church Manjunath Ghate | Quizbowl Assessment |

Expanded Course Schedule

| Date | Lecturer | Event |
|---------------------------------|--|--|
| Mon 01/04/21 07:00a - 10:00a | Rory Kim Ian Haworth Shital Panchal | Introductory Session Ahmedabad: January 4th, 8:30pm University Introductions (10 min) Roles of pharmacists in US and India (generic – not just diabetes) (2 x 10 min) Prevalence of Diabetes Mellitus (DM) in US and India (10 min) DM Pathophysiology (40 min) Basic principles of DM management (40 min) o Glycemic control o Prevention of complications o Labs/monitoring Basic pharmaceutical science principles (40 min) Introduction to drug information resources- USC library (a video will be posted) |
| Mon 01/11/21 07:00a - 10:00a | Rory Kim Ian Haworth Noam Morningstar- Kywi | Session 1: T2DM Drugs - Mechanisms of Action Ahmedabad: January 11th, 8:30pm SUs, Gliptins, SGLT Inhibitors, etc. (IH) (1.5 hours) GLP-1 Agonists, Insulin (IH, NMK, RK) (1.5 hours) |
| Mon 01/18/21 07:00a - 10:00a | Rory Kim Jigna Shah | Session 2: T2DM Treatment Guidelines (US/India) Ahmedabad: January 18th, 8:30pm Pharmacotherapeutic Management of Diabetes (RK) (1.5 hours) US Guidelines (45 minutes), India Guidelines (45 minutes) (RK, JS) (1.5 hours) |
| Mon 01/25/21 07:00a - 10:00a | Rory Kim Ian Haworth Manjunath Ghate | Project 1 Presentations Ahmedabad: February 1st, 8:30pm Student groups will present their project 1 presentations |
| Mon 02/01/21 07:00a - 10:00a | Rory Kim Ian Haworth | Session 3: ADME and DDIs of T2DM Drugs: Science and Clinical Perspectives Ahmedabad: January 25th, 8:30pm Joint clinical and science session on drug drug interactions |
| Mon 02/08/21 07:00a - 10:00a | Rory Kim Shital Panchal Snehal Patel | Session 4: T2DM Roles for Pharmacists (US/India) Ahmedabad: February 8th, 8:30pm Outpatient management, case example (RK) (1.5 hours) Roles of pharmacists in diabetes in India (Nirma University faculty) (1.5 hours) |

| Date | Lecturer | Event |
|---------------------------------|--|---|
| Mon 02/15/21 07:00a - 10:00a | Manjunath Ghatе Niyati Acharya Nagja Tripathi Bhumika Patel | <p>Session 5: Natural products for T2DM</p> <p>Ahmedabad: February 15th, 8:30pm</p> <p>Natural Products and Diabetes - Pharmacognosy and Pharmaceutical Chemistry Department.</p> <p>Department of Pharmaceutical Chemistry: (1.5 hours)</p> <p>Overview of diabetes with emerging targets, Current therapy and future scope, Case studies of development of antidiabetic agents (brief introduction because already covered above, try to relate to natural products)</p> <p>Department of Pharmacognosy: (1.5 hours)</p> <p>Overview of natural anti-diabetic agents, Preclinical and clinical studies on antidiabetic phytoconstituents, Case studies and recent research related to natural antidiabetic agents</p> |
| Mon 02/22/21 07:00a - 10:00a | Rory Kim Ian Haworth Manjunath Ghatе | <p>Project 2 Presentations</p> <p>Ahmedabad: February 22nd, 8:30 pm</p> <p>Student groups will present their project 2 presentations</p> |
| Mon 03/01/21 07:00a - 10:00a | Terry Church Bhoomika Patel Rajvi Patel Bhagawati Saxena | <p>Session 6: Regulatory and pharmacoeconomic considerations</p> <p>Ahmedabad: March 1st, 8:30 pm</p> <p>US Regulatory component (1.5 hours)</p> <p>Clinical trial for India - Pharmacology Department</p> <p>Essentials of Clinical trials with special reference to diabetes in India (1.5 hours, Nirma University faculty)</p> <p>Introduction to Clinical Trials, Regulatory approvals and Documentation in clinical trials</p> <p>Interventional Clinical trials for diabetes, Landmark clinical studies in Diabetes</p> |
| Mon 03/08/21 07:00a - 10:00a | Tejal Mehta Shital Butani Jigar Shah Mayur Patel | <p>Session 7: Future drug delivery and industrial application</p> <p>Ahmedabad: March 8th, 8:30 pm</p> <p>Instructors: Nirma University faculty</p> <p>Drug delivery systems for diabetes - Pharmaceutics Department</p> <p>Design and development of modified release dosage forms for Diabetes: (1.5 hours)</p> <p>Matrix & Reservoir systems, mechanism of drug release.</p> <p>Brief overview on formulation development of microspheres, nanoparticles, gastro retentive</p> <p>Novel insulin delivery technologies: (1.5 hours)</p> <p>Current status and future perspectives of Oral insulins, Inhaled insulins, Transdermal delivery of insulin, Glucose responsive delivery system.</p> |
| Mon 03/15/21 07:00a - 10:00a | Rory Kim Ian Haworth Terry Church Manjunath Ghatе | <p>Quizbowl Assessment</p> <p>Ahmedabad: March 15th, 8:30 pm</p> <p>Quizbowl: student-generated questions (2 hours)</p> |