

Mission Valley ROP

Career Technical Training Center

5019 Stevenson Blvd, Fremont, CA 94538-2449

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Course Title: **Honors PLTW Medical Interventions (MI) and Biomedical Innovations (BI)**

Units of Credit: 20 credits

Meeting Times/Dates: M-F: MVROP, 5019 Stevenson Blvd, Fremont, CA 94560

Afternoon session: 1:45-3:45 p.m.

Instructor Name: Masiha Farooq

Location/Room: MVROP, room 227

Contact Info: mfarooq@mvrop.org

Prerequisites: Three years of high school science or completion of PBS/HBS with a certificate of completion

Office hours: By request via email

Course Description:

Mission Valley ROP School Learning Outcomes (SLOs)

Upon successful completion of MVROP courses and programs, each student will demonstrate:

Workplace Basic Skills and Behaviors

1. Apply skills learned in class
2. Analyze information and make decisions
3. Communicate verbally and in writing
4. Work independently and as a team member in a diverse workplace
5. Work reliably, responsibly, and ethically

Career Technical Skills

1. Demonstrate occupational competencies
2. Use appropriate technology
3. Understand and practice occupational safety standards
4. Demonstrate an awareness of how a business or industry functions

Job Employment Skills

1. Develop a plan to achieve career goals
2. Use effective job search strategies
3. Demonstrate an awareness of the importance of lifelong learning

This year long PLTW class comprises two courses, MI in the first semester and BI in the second semester. MI and BI are both UC approved (“d” Lab credit). This syllabus explains expectations for MI (first semester) only. **A detailed and separate BI syllabus will be provided in the second semester.** An out of classroom experience termed externships will be a part of the second semester and requires that students should be able to provide their own transport to these externships. Externship placement has a grade requirement of at least a B-, along with the teacher’s recommendation. Some sites may have a higher grade requirement. Sites may also require proof of COVID-19 vaccination and/or other vaccinations. Certain sites may also require background checks and drug testing.

NOTE: These two biomedical courses are approved as an A-G “D” Lab Science with the UC Schools. This is **not** meant to replace physical and life science courses for graduation, but will satisfy a 3rd and 4th year science course.

Medical Interventions (MI) SEMESTER 1

Medical Interventions (MI) allows students to investigate the variety of interventions involved in the prevention, diagnosis, and treatment of disease as they follow the lives of a fictitious family. A “How-To” manual for maintaining overall health and homeostasis in the body, the course will explore how to prevent and fight infection, how to screen and evaluate the code in our DNA, how to prevent, diagnose, and treat cancer, and how to prevail when the organs of the body begin to fail. Through these scenarios students will be exposed to the wide range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

Biomedical Innovations (BI) SEMESTER 2*

In the final course of the PLTW Biomedical Science sequence, students build on the knowledge and skills gained from previous courses to design innovative solutions for the most pressing health challenges of the 21st century. Students address topics ranging from public health and biomedical engineering to clinical medicine and physiology.

Note: Detailed course content/course objectives for both courses are available at <http://www.mvrop.org/Page/231>

*A detailed separate syllabus for BI will be provided in the second semester

Portfolio:

Students will be required to create a comprehensive portfolio that showcases their professional technical and soft skills. The portfolio will include, at a minimum, a polished resume, a tailored cover letter, a fully completed job application, and one outstanding work sample or project that demonstrates their capabilities.

College articulation and college credit:

This honors MI/BI course is articulated with the Biot-105 Cell and Molecular Biology (4 units) course at Ohlone College, Fremont. In order to receive the Ohlone college credit, students must pass Medical Interventions, Biomedical Innovation and the Ohlone course assessments with a minimum score of 80%. Lab work is an integral part of this course and successful completion of lab skills in addition to grade and attendance requirements (see below), are required to earn both the MVROP certificate of completion and the Ohlone credits. In addition, students should complete the required Ohlone application in the Fall and Contract of Credit form in Spring.

Certificate of Completion.

Students completing each semester with a minimum grade of B- or better and an overall 85% or better attendance will receive a Mission Valley ROP Certificate of Completion listing competencies achieved in the course.

Course Materials

There is no textbook for this class. Each student will receive a login that gives them access to the PLTW curriculum online which has all the units, lessons, projects and activities. Please use your OWN login and login is not to be shared with anyone else.

A three-ring binder, binder paper, pen and pencil

Scientific Calculator

Lab notebooks, Lab coats and goggles (will be provided, unless students want to purchase their own)

Grading Policy/Evaluation (For MI)

Based on a point system. Categories are as follows:

- a. Skills (Classwork, labs, binder, homework, projects and presentations) -30%
- b. Knowledge (Quizzes and tests)-40%
- d. Employability skills (Participation, technical skills and soft skills) – 20%
- e. End of semester project (final project)-10%

Grading Scale

A+ = 97%	B+ = 87%	C+ = 77%	D+ = 67%
A = 93%	B = 83%	C = 73%	D = 63%
A- = 90%	B- = 80%	C- = 70%	D- = 60%
Less than 60% = F grade			

Policies and Procedures for High School Students **2024 - 2025 School Year**

HOMEWORK POLICY:

Students will be notified what assignments are due and when. It is the responsibility of the student to take down due dates. Students are responsible for completing the assigned reading and homework and keeping up with the class. Any late submissions will have points deducted. If the assignment is turned in within one working day **after** the due date, half of the points will be deducted. Points will also be lost if the assignment is incorrect or incomplete. No assignment will be accepted beyond one week of the scheduled date.

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Students are expected to complete assignments independently and with integrity. The use of artificial intelligence (AI) tools, such as chatbots or content generators, to complete or assist with assignments is strictly prohibited unless explicitly permitted by the instructor. Any use of AI to plagiarize, cheat, or misrepresent one's own work will result in disciplinary action, which may include a failing grade on the assignment, a failing grade for the course, and/or further action as outlined in the school's academic integrity policy.

ATTENDANCE:

- Mission Valley ROP's mission is to prepare students for employment, and career preparation via post-secondary educational opportunities. **Just as in business and industry, where employees are expected to show up on time every day, Mission Valley ROP students are expected to be on time for classes every day.** If your home high school has no school, a minimum day, or an optional student event that may conflict with your Mission Valley ROP class, you are still expected to attend your Mission Valley ROP class, unless otherwise directed by your MVROP instructor.
- Make up assignments and/or exams will be given for excused absences only, which include medical, legal, or bereavement circumstances. **Medical absences of three or more consecutive days must be verified by a doctor's note.** Failure to complete make-up assignments will adversely affect your grade. If you are tardy or miss a Mission Valley ROP class multiple times your grade will be adversely affected. Please note that labs cannot be made up, so any lab related makeup work, such as lab reports will automatically lose 10% .
- **Students must arrive on time to class.** Talking on a cell phone or having personal conversations outside the class is unproductive and will be considered tardy. Tardiness reduces instructional time and is disruptive to the classroom. Tardies may result in a student earning a lower grade or prevent the student from receiving a course certificate for the course. Tardy students will be placed on contract, which may result in being dropped from the ROP Center class.
- Except in cases of serious emergency, a student must have a note or receive the permission of the instructor to leave class to see an administrator.
- Hall passes prescribed by teachers are required for unaccompanied students to exit classrooms when class is in session. Students are to present their hall pass when asked by a school official.
- Many labs in MI/BI courses use perishable materials and/or require extensive set up which severely limits the opportunity for makeup work and hence **regular attendance is critical. Excessive lab absences will negatively impact grades.**

PLEASE NOTE THAT **your home school does NOT notify MVROP regarding attendance. Parent and student's counselor or administration (home school) will be called/emailed the student's absence for 2 DAYS and beyond if NO contact from the parent.**

BULLYING AND HARASSMENT

- Bullying is repeated behavior, which involves an imbalance of power by the perpetrator(s) that causes harm to the target(s). It may harass, intimidate, threaten, terrorize, harm, or exclude. Such behavior is often executed using electronic, written, verbal, visual, physical act or gesture, or conduct toward another person or persons.
- Mission Valley ROP is committed to providing a safe educational environment for students and staff in which all members of the school community are treated with dignity and respect in an

environment free from harassment, intimidation or bullying. Mission Valley ROP prohibits harassment, bullying, hazing, or any other form of victimization.

- This policy is in effect while students are on property within the jurisdiction of the school; going to or coming from the school, on school-owned and/or school-operated vehicles, attending or engaged in school sponsored activities; on/or away from school grounds if the misconduct directly affects the good order, efficient management and welfare of the school.
- All incidents of bullying and harassment should be reported to the administration for resolution.

CHEATING:

- Mission Valley ROP is committed to preparing students for the workforce. This preparation includes technical skills as well as business ethics. Mission Valley ROP does not tolerate cheating.
- Any student caught cheating on an exam or copying work from other students will be given one warning and a failing grade on that assignment. Any subsequent incident will result in termination from his/her Mission Valley ROP program, a failing grade, and loss of credits.

DRESS CODE:

- Proper attire is expected of Mission Valley ROP students. Pajamas, slippers, or clothing that is too revealing, a distraction, or poses a safety concern (i.e. pants that must be held up with one hand because they are too baggy) should not be worn. Appropriate undergarments must be worn at all times. Clothing must be clean, neat, in good repair, and must convey professionalism. Clothing/accessories that identify affiliation with street gangs may not be worn. Clothing which covers the head and eyes for fashion purposes will not be allowed in MVROP buildings (i.e.: hats, caps, hoodies, do-rags, skull caps, bandannas, sunglasses, etc.) At the discretion of instructor and/or administrator, students may be placed on contract for violating dress code and/or removed from class. Repeated dress code violations may result in dismissal from ROP Center class.
- MVROP students at internship sites must wear picture Identification Badges.
- Please see additional dress code policies under Lab Safety Protocols

OFF-CAMPUS RELEASE:

- When circumstances require a student to be released from class early at the parent's request, photo identification will be required by Mission Valley ROP to facilitate release of the minor child to the parent.
- Photo identification will be copied and a signature will be required.
- If parent/guardian cannot come to the ROP Center, a signed note from parent/guardian to the instructor and/or front desk stating the date, time, reason for release, and valid signature. The note must contain a phone number to verify with the parent/guardian the reason for leaving campus.
- If a signed note is not presented to proper personnel and a parent/guardian cannot be present to check out the student, a phone call from the parent is required.
- Once on campus, students may not leave Mission Valley ROP campus during school hours without proper authorization. Unauthorized students leaving campus may result in dismissal from ROP Center class.

NO FOOD/NO DRINKS:

- No food or drinks will be allowed in MVROP buildings, including classroom, lobby, hallway, and restrooms. The Student Lounge is the only room where food or drinks other than water should be

consumed. Students violating this policy will receive one warning via a behavior contract. Further incidents may result in termination from the ROP program.

- Students are encouraged to brown bag their lunch and eat before attending their ROP class to avoid being tardy.
- No food delivery services are allowed to be delivered to MVROP such as GrubHub, DoorDash, or pizza delivery except when pre-approved by the instructor for a class party.
- Please review Lab Safety protocol for additional policies

SMOKING/ALCOHOL/ILLEGAL SUBSTANCES:

- The use of tobacco, alcohol and drugs by minors is against the law. Students found in violation will be reported to law enforcement, dropped from his/her Mission Valley ROP program, and returned to his/her home school for further disciplinary action. This policy extends to all Mission Valley ROP-related training and activities including internship and job shadowing opportunities, field trips and events.

STUDENT BEHAVIOR:

- Mission Valley ROP provides courses for both high school and adult students, often in the same classroom. Appropriate behavior is expected from every student.
- Attending Mission Valley ROP programs is a privilege and is elective, not compulsory. Students who are unable or unwilling to comply with the established policies and procedures will be referred for transfer to their home school.

CLASSROOM BEHAVIOR:

1. Arrive to class on time.
2. Respect will be shown to all. No profanity.
3. At no time will you touch the teacher's desk or computer.
4. No food or drink/ gum allowed in the laboratory.
5. Follow all lab rules. Wear lab appropriate clothing and footwear.
6. No leaving class without permission from the instructor.
7. Leave lab equipment ALONE unless instructed. Handle lab equipment as instructed by the teacher when it is required to use them.
8. Listen while the instructor is talking.
9. Cell phones/headphones/electronic devices are strictly prohibited and need to be put away inside bags unless the instructor allows it for use related to the curriculum. Students have to follow additional cell phone/ electronic devices/headphone policies which will be explained in class.

MVROP suggests parental permission for your student to view movies and video clips that are used in our curriculum, or that are selected by me. This content, along with our hands-on activities such as labs, in-class discussions, and projects, give students a well-rounded opportunity to discover ethics. I am notifying you that we may watch a film/video in class with a rating above the PG-13 rating to illustrate a particular curricular-related concept.

Laboratory Safety:

Students and parents **must review and sign** a separate laboratory safety agreement before they are beginning lab work. This document goes over the lab safety rules and regulations for this class.

Laptops and other electronic equipment at MVROP:

There will be extensive use of laptops in the PLTW Biomedical Sciences class. Laptops are a privilege and not a right! Students are required to restrict laptop use to their curriculum and searching unrelated content on the laptops, playing games and changing desktop settings, etc. without teacher's permission is strictly prohibited. Students should abide by the Acceptable Use Policy and All Rules Regarding Cell Phone Use.

MVROP equipment is for educational purposes, Students are not allowed to take, modify, or add any files, programs, or data without permission from the teacher.

By signing below you acknowledge that you have read the course syllabus, and understand the requirements for the MVROP Biomedical Sciences: Honors Medical Interventions/ Biomedical Innovation program, 2024-25.

Student Agreement

As a student in this course, I have read and I understand the policies for the Biomedical Sciences course and agree to abide by the concepts outlined in the syllabus and disclosure statement.

Student's printed name _____

Student's phone/ email _____

Student's Signature _____ Date _____

Parent

My son/daughter has discussed with me the syllabus and the disclosure statement for the Biomedical Sciences Course and I agree with the documents and support my student in abiding by their precepts.

Parent/Guardian's printed name _____

Parent/Guardian's phone/ email _____

Parent/Guardian's Signature _____

Date _____

2024-25 PLTW MVROP Biomedical Sciences Laboratory Safety Rules

Your participation in this laboratory requires that you follow safe laboratory practices. You are required to adhere to the safety guidelines listed below, as well as any other safety procedures given by your instructor or the instructor(s) in charge of the course. In the next class meeting, you will be asked to sign a form certifying that you were informed of the safety guidelines and emergency procedures for this laboratory. Violations of these rules are grounds for expulsion from this laboratory.

Note: You have the right to ask questions regarding your safety in this laboratory, either directly or anonymously, without fear of reprisal (mfarooq@mvrop.org).

- Locate the emergency evacuation plan. Become familiar with the recommended exit routes and emergency procedures .
- Locate the emergency shower and eyewash station. Be familiar with the location of the fire extinguisher, fire alarm and fire blanket.
- The Safety Data Sheets (SDS) contain information on all known health hazards of the chemicals used in this course. In addition, there is information concerning the cleanup of spills and the accidental exposure to the chemical (e.g. skin contact or inhalation). You are advised to inspect the contents of the SDS binder.
- Dispose of all broken glassware, needles, and scalpel blades in the specially marked receptacle. Never place any of those items in the trash can.
- Exercise care in working with surgical instruments. Notify your instructor immediately if you receive any type of injury in the laboratory no matter how slight.
- Never pipette fluids by mouth. Pipettes will be available for your use. Check the odor carefully by waving a hand above the container and sniffing with caution . Never taste in the laboratory anything unless directed by your instructor.
- No make-up/lotion/ chapstick can be applied in the lab. Nails should be kept short. No long jewelry or raised stone ring(s)
- No food/water/chewing gum in the class. Do not drink water from the taps in the laboratory.
- School regulations prohibit eating and drinking at laboratory tables. If you wish to bring food/drink to lab, it must be stored in a designated “clean area” and eaten outside of the lab/ student lounge
- Shoes must be worn in the laboratory. Do not wear open-toed shoes or sandals.
- Wear a lab coat and safety goggles in this laboratory at all times, unless instructed otherwise.
- If you have long hair, please use a hair tie. Confine long hair during laboratory activities
- We suggest that you don’t wear loose long sleeves. Long sleeves should be rolled above the wrist.
- Full length pants/jeans only- no shorts/skirts allowed in the lab.
- No cell phones/iPods/ iPhones in the lab. Avoid texting at all times.
- Keep hands away from face, eyes, and clothes while using solutions, specimens, equipment, or materials in the laboratory.
- Wash your hands before and after working in the lab. Wear gloves as needed and directed to by your instructor. Students with open skin wounds on hands must wear gloves or be excused from the laboratory activity.
- Never carry hot equipment or dangerous chemicals through a group of students.
- Turn off the Bunsen/alcohol burner when you are not using it.

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- When heating material in a test tube, do not look into the tube or point it in the direction of any person during the process.
- When diluting acids, always pour acids into water, never the reverse. Combine the liquids slowly while stirring to distribute heat buildup throughout the mixture.
- If any hazardous reagents are spilled, notify your instructor at once. Wait for instructions before attempting to clean up a spill.
- Before obtaining any reagents, carefully read the labels on the bottles twice. Many chemicals have similar names. Never return unused chemicals or solutions to the original dispensing bottle.
- Follow the instructor's directions for disposal of chemicals. When no specific directions are given, you may dispose of non-hazardous, water-soluble substances in the sink, and place insoluble materials such as filter paper in the wastebasket. If you are not sure, ask first.
- Biological waste and any other material contaminated with bacteria should be disposed of in specially marked biohazard bins with biohazard bags inside.
- Perform the only experiment and materials assigned; do not experiment on your own. No unauthorized experiments are allowed. Make sure to understand and read all the directions before starting a lab procedure
- Every chemical in a laboratory must be properly labeled. Many chemicals have similar names, and you should read the name twice. If a chemical is a solution, the concentration will also appear on the label. Solution concentration is commonly described by molarity (e.g. 6M HCL) or by percent concentration (e.g. 0.9% NaCl). Labels should also include the initials of the preparer and the date of preparation.
- Use the proper instrument (eye-dropper, scoopula, etc.) to remove reagents from bottles. Do not cross contaminate reagents by using the same scoopula for two different reagents, e.g. don't use the mustard knife in the jelly jar.
- All accidents have to be reported to the teacher, no matter how minor they are.
- To treat a burn from an acid or alkali, wash the affected area immediately with plenty of running water. If the eye is involved, irrigate it at the eyewash station without interruption for 15 minutes. Report the incident to the teacher immediately.
- Report to the teacher immediately if an instrument or equipment is not working properly.
- Keep work areas clean. Floors and aisles should be kept clear of equipment and materials.
- Light gas burners only as instructed by the teacher. Be sure no volatile materials (such as alcohol or acetone) are being used nearby.
- Use a burner with extreme caution. Keep head and clothing away from the flame and turn it off when not in use.
- Use a fire blanket (stop, drop, and roll) to extinguish any flame on a person.
- Students are not permitted in laboratory storage areas without the approval of the teacher.
- Report broken glassware, including thermometers, to the teacher immediately. Do not touch any broken glassware with bare hands.
- Operate electrical equipment only in a dry area and with dry hands.
- When removing an electrical plug from its socket, pull the plug, not the electrical cord.
- Treat all animals in the science laboratory humanely—that is, with respect and consideration for their care.
- Always approach laboratory experiences in a serious and courteous manner.
- Always clean the laboratory area before leaving.
- Additional lab policies will be included as and when required.

Student Safety Agreement

2024-25 MVROP Biomedical Science Laboratory Regulations

Student's name and date: _____

The student has received specific instruction regarding the use, function, and location of the following:

- ☐ Lab coat and gloves
- ☐ Spill kit
- ☐ Eye-protective devices
- ☐ Eyewash fountain and emergency shower
- ☐ Fire extinguisher
- ☐ Fire blanket
- ☐ First-aid kit
- ☐ Heat sources
- ☐ Standardized Safety Data Sheets (SDS)
- ☐ Waste-disposal containers for different types of waste like glass, sharps and biological waste

The student will abide by the “Biomedical Science Laboratory Regulations” to prevent accidents and injury to herself or himself and others and will:

- follow all additional instructions given by the teacher;
- conduct herself or himself in a responsible manner at all times in the laboratory.

List below any special allergies or sensitivities (e.g., to plants, animals, pollen, foods, chemicals, bee stings) that may affect the student's safety in the laboratory or on field trips. Attach to this sheet a list of emergency medications and procedures to be used in case the student is exposed.

☐ Check this box if the student wears contact lenses:

Student's Statement

I have in my possession and have read the “Biomedical Science Laboratory Regulations” and agree to abide by them at all times while in the laboratory. I have received specific safety instructions as indicated above.

Signature of student: _____

Date: _____

Parent's or Guardian's Statement

I have read the “2024-25 Biomedical Science Laboratory Safety Rules” and give my consent for the student who has signed the preceding statement to engage in laboratory activities using a variety of science equipment and materials, including those described. I pledge my cooperation in urging that she or he observes the safety regulations prescribed.

Signature of parent or guardian: _____

Date: _____