

Innovations in Clinical Care (ICC) Enhanced Medical Education Track (EMET)

What is innovation?

Innovation is the introduction into common use of a tangible idea that solves a problem. Medical innovation generates better patient outcomes, improves public health and extends globally the medical impact on patients. Innovation can be intellectually stimulating, remunerative and could even lead to academic promotion.

Why Innovations in Clinical Care?

Physicians can become frustrated when they notice a problem that needs correction that nobody else sees or tries to resolve. Innovators connect the dots and find a solution while others either failed to see the dots or explore their potential, much less connect them. Students who complete the ICC track will be ahead of their peers in their ability to see those details and connect the dots.

William Pollard once said, “Learning and innovation go hand in hand. The arrogance of success is to think that what you did yesterday will be sufficient for tomorrow.”

1) Director and coordinator for this track:

- Michael Dixon, Ph.D. (President & CEO, UNeMed Corporation) – Director
- Agnes Lenagh, Ph.D. (Licensing Specialist, UNeMed Corporation) – Coordinator

2) Educational objectives for the ICC Track:

The ICC track will expose the student to medical innovations and provide mentorship, knowledge and experience that will support and encourage interest in technology transfer and entrepreneurship.

- Explore research commercialization through projects currently under development in UNeMed’s technology portfolio
- Develop an awareness of the innovation process as it relates to the scientific, legal, and business activities needed to commercialize a new technology that resulted from academic research
- Gain insight into the life cycle of biomedical technology transfer process, including, evaluating an invention disclosure, seeking intellectual property protection, performing market analysis, developing the technology, assessing the regulatory pathway, and eventual commercialization
- Initiate a research project to further a medical technology and develop a deeper understanding of the research process
- Build critical thinking skills that drive the creation of solutions to unmet clinical needs throughout a future medical career

3) Assessment of student achievement of the track objectives:

- Faculty mentor, the director and other faculty involved in the program will perform yearly evaluations to review the student’s progress in the educational objectives.
- Each student must also complete a yearly self-evaluation on his/her progress.

4) Supplement to the current medical school curriculum:

- Current medical school curriculum lacks any training in technology transfer, business development, or research commercialization. This track should provide the student with an understanding of academic medicine and research pertaining to technology development.
- It is anticipated that the student will be exposed to skill development and mentoring in technology development, market analysis, marketing, prototype development, study implementation, data collection and analysis, report generation, and administrative issues.
- The track aims to connect the student into networks of real world resources: interdisciplinary advisors, faculty inventors, entrepreneurs, industry mentors, professional investors. The student will have the opportunity to network with these resources at National and International events.
- As a member of the Innovator’s research team, the student will have access to the faculty, researchers, personnel, and collaborators within the mentor’s department and other associated disciplines.
- The student will have the opportunity to attend seminars, interest group discussions, and other meetings related

5) Outline of educational experiences with estimate of the total hours per month that the students may be involved in completing activities for the ICC track

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a) **M1 year:**

- The student will be exposed to all the different types of innovative technologies being developed on campus with the anticipation that they will choose an area for further studies during the later years.
- **Summer boot camp and research component:** The student will also be enrolled in the Technology Transfer Boot Camp, an introductory summer short course presenting the entire life cycle of the bioscience technology commercialization process, beginning with invention disclosure and culminating with technology licensing. Since the student is able to work during holidays and throughout the summer between the first and second medical school years, we foresee the student will be able to spend a significant amount of time working on a research project with their faculty mentor (~40 hours/week for 10 weeks in summer = 400 hours).
- The Medical Consequences Interest Group meets once a month to discuss innovative research being conducted on campus and available resources that may help along the way. The assigned faculty mentor will spend an additional hour to discuss meeting content with the student (2 hours and 10 times per year = 20 hours/year)
- UNMC regularly plays hosts to a myriad of speakers who present their basic or clinical research. The student is invited to attend any seminars of interest as long as it does not interfere with Medical School classes. The faculty advisor will sometimes meet with the invited speaker and the student may be asked to attend the meeting if it is deemed appropriate (10 hours/year anticipated availability).
- It is anticipated that the student will be allowed to “shadow” clinicians in the faculty advisor’s department whenever the Medical School curriculum permits (10 hours/year anticipated).
- UNeMed Corporation has a Strategic Technology Advisory Committee meeting every week to discuss outcomes of invention evaluations and other issues associated with university technologies. These confidential meetings will most likely conflict with the student’s Medical School curriculum, but the student should be able to attend at various times throughout the year (attend two per semester).
- UNeMed Corporation hosts a yearly weeklong series of events culminating with a celebration of innovation on campus. The student will be invited to participate, attend and help organize the events during Innovation Week (20 hours/year anticipated).
- It is anticipated that the faculty advisor’s group will meet regularly for research presentations, lectures, journal club presentations, and Fellows and Resident presentations. The student will be invited to attend these meetings and although they might conflict with the Medical School curriculum, it is anticipated that the student should be able to attend at various times during the year (20 hours/year anticipated).

b) **M2 & M3 Years**

- It is anticipated that the student will spend at least 120 hours on their research and should at least be able to complete 40 hours of optional activities over the year
- The student will generate data related to the project identified during the first summer. The collected data will be used in a presentation at a National or International Meeting sometime during the M3 or M4 year. The student may work on the project during the summer, holidays or other free time. We foresee the student will be able to spend a significant about 120 hours each year in this area to complete this requirement in (~40 hours for about 3 weeks).
- The student is encouraged to attend the Medical Consequences Interest Group meetings once a month and spend an additional time with the faculty mentor for a follow up discussion (2 hours and 10 times per year = 20 hours/year)
- The student is invited to attend any seminars of interest and attend any individual meetings between the faculty advisor and the invited speaker if deemed appropriate (10 hours/year).
- It is anticipated that the student will be allowed to “shadow” clinicians in the faculty advisor’s department whenever the Medical School curriculum permits (10 hours/year anticipated).
- The student should attend at least two Strategic Technology Advisory Committee meetings at UNeMed throughout the year (two per semester).
- The student will be invited to participate, attend and help organize the events during UNeMed’s annual Innovation Week (20 hours/year anticipated).
- It is anticipated that the faculty advisor’s group will meet regularly for research presentations, lectures, journal club presentations, and Fellows and Resident presentations. The student will be invited to attend these meetings and although they might conflict with the Medical School curriculum, it is

anticipated that the student should be able to attend at various times during the year (20 hours/year anticipated).

c) M4 Year

- All the optional activities offered during the M2 and M3 years are available
- It is expected that the student will prepare an abstract and a presentation for a National or International meeting or a manuscript on their research. The student will most likely attend such meeting sometime during the end of the program and during their M4 year. Meetings typically run at least 8 hours for 4 days (32 hours/year).

6) Opportunities for students to interact with faculty:

- The student will have many opportunities to interact with faculty inventors on campus through UNeMed.
- It is anticipated that the student will attend meetings with UNeMed staff to discuss technologies with faculty in different departments on campus.
- Most faculty also have dual appointments as clinicians and the student will be able to “shadow” the faculty mentor to become more familiar with the field of study and the problems being solved.
- Once the student selects a project, the faculty mentor will be available to meet as his/her schedule permits throughout the day.
- Interactions will also be more common as the student spends more time pursuing a research project as part of the mentor’s research group.

7) Interdisciplinary nature of the ICC track:

- As the technology transfer entity for UNMC, UNeMed interacts with all departments on campus and across all discipline fields.
- We anticipate the student to develop a working relation with a faculty mentor that submitted an invention with a clinical application. These faculty inventors come from different departments including, but not limited to, Internal Medicine, Emergency Medicine, and Surgery.
- In order to fulfill research pertaining to the development of a technology, the student will be involved in discussions between researchers, technologists, engineers, clinicians and other healthcare providers.
- Additional meeting will be held with UNeMed’s personnel regarding the business development, licensing and intellectual property aspects of the technology.
- It is anticipated that the student will also be involved with the local industrial and entrepreneurship community in and around Nebraska. UNeMed is part of BioNebraska, a life science association dedicated to the development and growth of Nebraska’s bioscience industry through supporting basic research in the life sciences, aiding in the development of a highly educated work force, and providing a welcoming environment for attracting new and expanding businesses.
- UNeMed is also a member of the Association of University Technology Managers (AUTM), and we constantly participate in events and courses geared toward education in the technology transfer area. Interaction with professionals in other institutions and in industry should occur through this channel.

8) Selection of students and maximum number of participants for the ICC track:

- Students will be asked to submit a one-page statement describing their interest and rationale for wanting to participate in this track.
- Students will be selected based on interest, willingness to make the expected time commitment, and maintenance of good academic standing.
- This track will accept 2 students per year, maximum total of 8 at a time.

9) Benefits and recognition that students will receive for completing the ICC track:

- Certificate of recognition from UNeMed Corporation and a certificate of completion at graduation
- Recognition on their Medical Student Performance Evaluation
- Acknowledgement of the program completion on their transcripts
- Honor thesis associated with the research they have completed
- Students may complete the program with a published abstract or manuscript. In addition to giving a presentation at a National or International meeting. These will be added to the student’s CV and could provide strong, personal letters of recommendations from their faculty advisors.