**Biomedical Informatics Graduate Program**

### Course Schedule - Academic Year 2020-2021

***Schedule Subject to Change***

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| **Yr** | **Qtr** | **Course #** | **Course Title** | **Instructor** | **Credits** | **Day** | **Please Note** |
| **20** | **Summer** | BMI 501/601 \* | Research | Varies | 1.0-6.0 | Varies | 501 – requires 50x form |
|  | BMI 502/602 \* | Independent Study | Varies | 1.0-4.0 | Varies | Requires 50x/60x form |
|  | BMI 503 \* | Master’s Thesis | Varies | 1.0-4.0 | Varies | Recommended: BMI 570 |
|  | BMI 603 \* | Dissertation | Varies | 1.0 | Varies |  |
|  | BMI 505/605 \* | Reading & Conference | Varies | 1.0-3.0 | Varies | Requires 50x/60x form |
|  | BMI 509/609 \* | Practicum | Varies | 1.0-3.0 | Varies | Requires consent of Internship Coordinator |
|  | **BMI 510/610 \***  | **Intro to Biomedical Informatics** | **W. Hersh** | **3.0** | **Online** | **Required course for certificate** |
|  | ~~BMI 517/617 HY~~ ~~+~~ | ~~Organizational Behavior and Management~~ **~~Hybrid~~** ~~(distance and on-campus)~~ | ~~J. Ash~~ | ~~3.0~~ | ~~Synchronous virtual sessions: July 20-23, 2020~~ | ~~Open to all informatics students3.0 credits of MBI, MS NT residency requirement.See below for details.~~ |
|  | **BMI 519/619** | **Business of Healthcare Informatics** | **V. Mohan** | **3.0** | **Online** | **Prereq: None** |
|  | **BMI 521/621** | **Public Health Informatics** | J.A. Magnuson | **3.0** | **Online** |  |
|  | ~~BMI 548/648-HY~~~~+~~ *~~Tentative~~* | ~~Human Computer Interaction~~**~~Hybrid~~** ~~(distance and on-campus)~~ | ~~M. Hribar/M. Chiang~~ | ~~3.0~~ | ~~TBD~~ | ~~Open to all informatics students3.0 credits of MS NT residency requirement.See below for details.~~ |
|  | BMI 561/661HY+ | Qualitative Research Methods | J. Ash/C. Hoekstra | 3.0 | Synchronous virtual sessions:M-Th, July 6-9, 2020 | Prereq: None |
|  | BMI 569/669-HY+ | Data Analytics**Hybrid** (distance and on-campus) | S. McWeeneyB. SikoraD. MooreT. Laderas | 3.0 | Synchronous virtual sessions Tuesdays 3:30-5:30 PST | Prereqs: (BMI 540 or 565) AND (BSTA 525/PHPM 524 or BSTA 511 or MATH 530). Experience with R (or other scripted statistical language), SQL, and spreadsheets a positive. (Students must bring a laptop to class.) Signature required. |
|  | BMI 581 \* | Capstone Project | Varies | 1.0-6.0 | Varies | Prereq: 30 credits of prior coursework. Recommended: BMI 570. Signature required. |
|  |  | BMI 590 | Capstone: Internship | Varies | 1.0-6.0 | Varies | Prereq: approval of Internship Coordinator |
|  |  | BMI 654 \* | Mentored Teaching Prep | Varies  | 1.0 | Varies | Requires Mentored Teaching contract |
|  |  | BMI 655 \* | Mentored Teaching | Varies | 3.0 | Varies | Prereq: BMI 654 |
|  |  | BMI 657 \* | Doctoral Symposium | Varies | 3.0 | Varies |  |
|  |  | **BSTA 525** | **Intro to Biostatistics** | **Lin** | **4.0** | **Online** | **Prereq: Ready for R (see course catalog)** <https://ready4r.netlify.app/mailing> |
| **20** | **Fall** | BMI 501/601 \* | Research | Varies | 1.0-6.0 | Varies | 501 – requires 50x form |
|  | BMI 502/602 \* | Independent Study | Varies | 1.0-4.0 | Varies | Requires 50x form |
|  | BMI 503 \* | Master’s Thesis | Varies | 1.0-4.0 | Varies | Recommended: BMI 570 |
|  | BMI 603 \* | Dissertation | Varies | 1.0 | Varies |  |
|  | BMI 505/605 \* | Reading & Conference | Varies | 1.0-3.0 | Varies | Requires 50x/60x form |
|  | BMI 507/607 \* | Seminar | Varies | 1.0-4.0 | Varies |  |
|  | BMI 509/609 \* | Practicum | Varies | 1.0-3.0 | Varies | Requires consent of Internship Coordinator |
|  | BMI 510/610 | Introduction to Biomedical Informatics | W. Hersh | 3.0 | Fri. | Required course for certificate |
|  | **BMI 510/610 \***  | **Introduction to Biomedical** **Informatics** | **W. Hersh** | **3.0** | **Online** | **Required course for certificate** |
|  | **BMI 512/612 \***  | **Clinical Information Systems** | **V. Mohan** | **3.0** | **Online** | **Required course for certificate****Prereq: BMI 510** |
|  | **BMI 517/617** | **Organizational Behavior** | **C. Hoekstra/J. Ash** | **3.0** | **Online** | **Prereq: None** |
|  | **BMI 523/623** | **Clinical Research Informatics** | **N. Weiskopf/R. Schuff** | **3.0** | **Online with required synchronous sessions each Monday** | **Synchronous online discussion via Sakai each Monday 5:00-6:30 PST. Attendance is required.**  |
|  | **BMI 530/630 \*** | **The Practice of Health Care** | **D. Chase** | **3.0** | **Online with required synchronous sessions each Thursday** | **For non-clinicians. Online discussion Thursdays 5:15-7:15 PST. Attendance is required at 8 or more sessions. Offsite students must have a laptop with a webcam, an internet connection and a telephone.** |
|  | BMI 531 | Probability & Statistical Inference for Scientists and Engineers | Chamberlin | 3.0 | M/W | Instructor’s signature required. BMI 531 is the prereq for BMI 543 Machine Learning. Prereqs: Linear algebra, multivariable calculus, familiarity with R. |
|  | **BMI 540/640 \***  | **Computer Science and Programming for Clinical Informatics** | **Hribar** | **3.0** | **Online** | **Prereq: Introductory computer programming class in Python, Java, C or C++. Signature required.** |
|  | BMI 550/650 | BCB: Algorithms | J. Jacobs | 4.0 | M/W | Bioinformatics track. Non-BMI students require department’s permission. Prereq: BMI 565 (may be taken concurrently). |
|  | BMI 559/659 | Computational Genetics | S. McWeeney | 3.0 | T/F | Bioinformatics track or consent of instructor |
|  | BMI 565/665 | Bioinformatics Programming & Scripting | M. Mooney | 3.0 | Tues/Thu | Bioinformatics major or consent of instructor. Prereq: Introductory computer programming class. BMI 565 is prereq for BMI 550 (may be taken concurrently). |
|  | **BMI 570/670 \*** | **Scientific Writing and Communication for Informatics** **Students** | **K. Pyle** | **3.0** | **Online** | **Limited to 20 students. Instructor signature required. Priority in registration given to master’s and PhD students.**  |
|  | BMI 581 \* | Capstone Project | Varies | 1.0-6.0 | Varies | Prereq: 30 credits of prior coursework. Recommended: BMI 570. Signature required. |
|  | BMI 590 | Capstone: Internship | Varies | 1.0-6.0 | Varies | Prereq: approval of Internship Coordinator |
|  | BMI 654 \* | Mentored Teaching Prep | Varies | 1.0 | Varies | Requires contract. Signature required. |
|  | BMI 655 \* | Mentored Teaching | Varies | 3.0 | Varies | Prereq: BMI 654. Signature required. |
|  | BMI 657 \* | Doctoral Symposium | Varies | 3.0 | Varies | Signature required. |
|  | **BSTA 525** | **Intro to Biostatistics**  | **Srikanth** | **4.0** | **Online** | Prereq: Ready for R <https://ready4r.netlify.app/mailing> |
|  | HIP 511 | Clinical Research Design I | HIP staff | 2.0 | Varies | Required for PhD CI track |
|  | HIP 516 | Protection of Human Subjects | HIP staff | 1.0 | 4 days in November, see HIP website | Required for all Year 1 PhD students |
|  | MGEN 622 | Advanced Topics in Genome Sciences | S. Richards | 3.0 | M/W/F | Bioinformatics track individual competency |
|  |  |  |  |  |  |  |
| **21** | **Winter** | BMI 501/601 \* | Research | Varies | 1.0-6.0 | Varies | 501 – requires 50x/60x form |
|  | BMI 502/602 \* | Independent Study | Varies | 1.0-4.0 | Varies | Requires 50x/60x form |
|  | BMI 503 \* | Master’s Thesis | Varies | 1.0-4.0 | Varies | Recommended: BMI 570 |
|  | BMI 603 \* | Dissertation | Varies | 1.0 | Varies |  |
|  | BMI 505/605 \* | Reading & Conference | Varies | 1.0-3.0 | Varies | Requires 50x/60x form |
|  | BMI 507/607 \* | Seminar | Varies | 1.0-4.0 | Varies |   |
|  | BMI 509/609 \* | Practicum | Varies | 1.0-3.0 | Varies | Requires consent of Internship Coordinator |
|  | **BMI 510/610 \***  | **Introduction to Biomedical** **Informatics** | **W. Hersh** | **3.0** | **Online** | **Required course for certificate** |
|  | **BMI 516** | **Standards for Interoperability** | **B. Orwoll** | **3.0** | **Online** | **Prereq: BMI 510** |
|  | **BMI 518/618** | **Project Management** | **J. Ash/D. Woodcock** | **3.0** | **Online** | **Prereq: None** |
|  | BMI 535/635 | Management and Processing of Large Scale Data | M. Mooney/T. Laderas | 3.0 | Tue/Fri | Required in Bioinformatics track.Prereqs: BMI 550, BMI 565, familiarity with Linux and SQL |
|  | **BMI 538/638** | **Medical Decision Making** | **K. Eden** | **3.0** | **Online** | Ability to complete basic algebra problems and knowledge of probability are necessary for this course.  If you have questions, please email the instructor, Karen Eden, edenk@ohsu.edu. |
|  | **BMI 544/644 \***  | **Databases** | **M. Lieberman** | **3.0** | **Online** | **Prereq: None but BMI 540 or 565 recommended** |
|  | BMI 551/651 | Statistical Methods in Computational Biology | J. Jacobs | 4.0 | Tue/Thu | Bioinformatics major. Non-BMI students require department’s permission. |
|  | BMI 552A/652A | Research Methods in Bioinformatics | E. Boudreau | 1.0 | Fri | Required of all BCB majors and all PhD students. |
|  | **BMI 560/660** | **Design and Evaluation in Health Informatics** | **V. Mohan** | **3.0** | **Online** | **Prereq: PHPM 524/BSTA 525 or BSTA 511, OR consent of instructor** |
|  | BMI 581 | Capstone Project | Varies | 1.0-6.0 | Varies | Prereq: 30 credits of prior coursework. Recommended: BMI 570. Signature required. |
|  | BMI 590 | Capstone:Internship | Varies | 1.0-6.0 | Varies | Prereq: approval of Internship Coordinator |
|  | BMI 654 \* | Mentored Teaching Prep | Varies | 1.0 | Varies | Requires contract, instructor’s signature. |
|  | BMI 655 \* | Mentored Teaching | Varies | 3.0 | Varies | Prereq: BMI 654. Signature required. |
|  | BMI 657 \* | Doctoral Symposium | Varies | 3.0 | Varies | Signature required. |
|  | BSTA 525 | Intro to Biostatistics | Staff | 4.0 | On campus at OHSU |  |
|  | BMSC 662 | Bioregulation | Turker/McCullough | 3.0 | Tue/Thu | Bioinformatics track individual competency |
|  | BMSC 663 | Molecular Cell Biology | Enns/Musil | 3.0 | Mon/Wed/Fri | Bioinformatics track individual competency |
|  | HIP 512 | Clinical Research Design II | HIP staff | 2.0 | Varies | Required for PhD CI track |
|  | OCTRI RCR | Responsible Conduct in Research | OCTRI staff | 0.0 | 4 days in Feb./Mar. See website | Required of all Year 1 NIH (NLM, NIEHS, etc.) Postdocs. |
| **21** | **Spring** | BMI 501/601 \* | Research | Varies | 1.0-6.0 | Varies | 501 – requires 50x form |
|  | BMI 502/602 \* | Independent Study | Varies | 1.0-4.0 | Varies | Requires 50x/60x form |
|  | BMI 503 \* | Master’s Thesis | Varies | 1.0-4.0 | Varies | Recommended: BMI 570 |
|  | BMI 603 \* | Dissertation | Varies | 1.0 | Varies |  |
|  | BMI 505/605 \* | Reading & Conference | Varies | 1.0-3.0 | Varies | Signature required |
|  | **BMI 507/607** | **Seminar: Applied Machine Learning** | **W. Hersh** | **3.0** | **Online** | **Elective** |
|  | BMI 509/609 \* | Practicum | Varies | 1.0-3.0 | Varies | Requires consent of Internship Coordinator |
|  | **BMI 510/610 \***  | **Introduction to Biomedical** **Informatics** | **W. Hersh** | **3.0** | **Online** | **Required course for certificate** |
|  | **BMI 512/612 \***  | **Clinical Information Systems** | **V. Mohan** | **3.0** | **Online** | **Required course for certificate****Prereq: BMI 510** |
|  | **~~BMI 514/614 TBD~~** | **~~Information Retrieval~~** | **~~W. Hersh~~** | **~~3.0~~** | **~~Online~~** | **~~Prereq: BMI 510. Offered odd years only.~~**  |
|  | **BMI 517/617** | **Organizational Behavior and Management** | **C. Hoekstra** | **3.0** | **Online** | **Prereq: None** |
|  | **BMI 524/624\*** | **Analytics for Healthcare** | **Pandit/Edinger** | **3.0** | **Online** | **Recommended: Familiarity with Tableau** |
|  | BMI 525/625 | Principles & Practice of Applied Machine Learning | S. Bedrick | 3.0 | Mon/Wed | Prereq: Familiarity with R programming (complete Ready for R in order to register). Instructor’s signature required. |
|  | **BMI 537/637** | **Healthcare Quality** | **M. Lieberman** | **3.0** | **Online** | **Prereq: None** |
|  | BMI 543/643 | Machine Learning | X. Song | 3.0 | Tue/Thu | Prereq: BMI 531 (formerly MATH 530), linear algebra, multivariate calculus, probability. Instructor’s signature required |
|  | BMI 546/646 | Software Engineering | A. Cohen | 3.0 | W | Prereq: BMI 540 or BMI 565 |
|  | **BMI 546/646** | **Software Engineering** | **A. Cohen** | **3.0** | **Online** | **Prereq: BMI 540 or BMI 565** |
|  | BMI 552B/652B | Research Methods in Bioinformatics | E. Boudreau | 1.0 | Fri | Required of all BCB majors and all PhD students. |
|  | BMI 553/653 | BCB: Readings in Bioinformatics | J. Jacobs | 1.0 | Tue | Required in Bioinformatics major |
|  | **BMI 576/676** | **Managing Ethics in Biomedical Informatics**  | **J. Valerius** | **3.0** | **Online** | **Required for all master’s and PhD students** |
|  | BMI 581 \* | Capstone Project | Varies | 1.0-6.0 | Varies | Prereq: 30 credits of prior coursework. Recommended: BMI 570. Signature required. |
|  | BMI 590 | Capstone:Internship | Varies | 1.0-6.0 | Varies | Prereq: approval of Internship Coordinator |
|  | BMI 654 \* | Mentored Teaching Prep | Varies | 1.0 | Varies | Requires contract. Signature required. |
|  | BMI 655 \* | Mentored Teaching | Varies | 3.0 | Varies | Prereq: BMI 654. Signature required.  |
|  | BMI 657 \* | Doctoral Symposium | Varies | 3.0 | Varies | Signature required. |
|  | BSTA 525 (at PSU) | Intro to Biostatistics | Dinno | 4.0 | M/W | Prereq: Ready for R <https://ready4r.netlify.app/mailing> |
|  | HIP 513 | Clinical Research Design III | HIP staff | 2.0 | Varies | Required for PhD HCIN major |
|  | MGEN 623 | Genetic Basis of Human Disease | S. Richards | 3.0 | M/W/F | Bioinformatics track individual competency in PhD |
| **21** | **Summer** | BMI 501/601 \* | Research | Varies | 1.0-6.0 | Varies | 501 – requires 50x form |
| *(Tentative)* | BMI 502/602 \* | Independent Study | Varies | 1.0-4.0 | Varies | Requires 50x/60x form |
|  | BMI 503 \* | Master’s Thesis | Varies | 1.0-4.0 | Varies | Recommended: BMI 570 |
|  | BMI 603 \* | Dissertation | Varies | 1.0 | Varies |  |
|  | BMI 505/605 \* | Reading & Conference | Varies | 1.0-3.0 | Varies | Requires 50x/60x form |
|  | BMI 507/607 | Seminar | Varies | 1.0-3.0 | Varies |  |
|  | BMI 509/609 \* | Practicum | Varies | 1.0-3.0 | Varies | Requires consent of Internship Coordinator |
|  | **BMI 510/610 \***  | **Introduction to Biomedical** **Informatics** | **W. Hersh** | **3.0** | **Online** | **Required course for certificate** |
|  | **BMI 519/619** | **Business of Health Care Informatics** | **J. Valerius** | **3.0** | **Online** | **Prereq: BMI 510** |
|  | BMI 536/636 **Hybrid** | Evidence-based Medicine **Hybrid** (virtual synchronous sessions using Zoom) | W. Hersh | 3.0 | Virtual hybrid. Synchronous sessions: TBD | Prereq: None3.0 credits of MS NT residence requirement. |
|  | BMI 548/648**Hybrid** | Human Computer Interaction**Hybrid** (distance and on-campus) Course | M. HribarM. Chiang | 3.0 | On campus portion: TBD | Prereq: None.3.0 credits of MS NT residence requirement. |
|  | BMI 569/669**Hybrid** | Data Analytics**Hybrid** (distance and on-campus) course | T. LaderasB. SikoraD. Moore S. McWeeney | 3.0 | On campus portion: TBD | Prereqs: (BMI 540 or 565), and (BSTA 525/PHPM 524 or BSTA 511 or MATH 530). Experience with R (or other scripted statistical language), SQL, AND spreadsheets a positive.   Students must bring a laptop to class. Signature required. |
|  | BMI 581 \* | Capstone Project | Varies | 1.0-6.0 | Varies | Prereq: 30 credits of prior coursework. Recommended: BMI 570. Signature required. |
|  | BMI 590 | Capstone:Internship | Varies | 1.0-6.0 | Varies | Prereq: approval of Internship Coordinator |
|  | BMI 654 \* | Mentored Teaching Prep | Varies  | 1.0 | Varies | Requires contract. Signature required. |
|  | BMI 655 \* | Mentored Teaching | Varies | 3.0 | Varies | Prereq: BMI 654. Signature required. |
|  | BMI 657 \* | Doctoral Symposium | Varies | 3.0 | Varies | Signature required. |
|  | **BSTA 525**  | **Intro to Biostatistics**  | **Staff** | **4.0** | **Online** | **Prereq: Ready for R** <https://ready4r.netlify.app/mailing> |

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| **2020 Hybrid Courses+** |
| Summer Term | BMI 517/617 | Organizational Behavior and Management | TBD | 3.0 | Hybrid course**Pre-campus:**June 29-TBD**On campus:** July 20-23**Post-campus:** M-Th,July 24-Sept. 11.Location: BICC 1249:00-2:00 | On campus3.0 credits of residency requirement (MS NT)**Offered odd years only**Prereqs: None |
| Summer Term | BMI 548/648 | Human Computer Interaction | M. HribarM. Chiang | 3.0 | Hybrid course **Pre-campus:**June 29-Sept. 9**On Campus:** Th-M,Sept. 10-14Location: BICC 1249:00-4:00 | On campusOpen to all informatics students3.0 credits of residency requirement (MS NT)Prereq: None |
| Summer Term | BMI 569/669 | Data Analytics | S. McWeeneyB. SikoraD. MooreT. Laderas | 3.0 | Hybrid course**Pre-campus:**June 29-Aug. 16**On-campus:** M-F,Aug. 17-21**Post-campus:**Aug. 22-Sept. 11Location: BICC 124M-Th, 9:00-4:00F, 9:00-12:00 | On campus3.0 credits of residency requirement (MS NT)Prereqs: (BMI 540 or 565), and (PHPM 524/BSTA 525 or BSTA 511 or MATH 530). Experience with R (or other scripted statistical language), SQL, and spreadsheets a positive. Students must bring a laptop to class.  Instructor’s permission required. |

Summer 2020 registration begins May 18, 2020

Summer Term dates: June 29, 2020-Sept. 11, 2020

Fall 2020 registration begins August 10, 2020

Winter 2021 registration begins November 30, 2020

Spring 2021 registration begins February 15, 2021

+**Some pre-campus and post-campus coursework is required**. See Course Catalog at <https://www.ohsu.edu/school-of-medicine/medical-informatics-and-clinical-epidemiology/course-catalog> for details.

\* Open to BMI degree seeking students only (includes graduate certificate students). Non-BMI students must obtain department permission.

500 level - Master’s degree

600 level - PhD degree