Syllabus

QMRA Innovation Institute (QMRA II) 10 days

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| **Day/Time** | | | **Topics** | **Lead Lecturers** |
| **Sunday**  **(Jun 30th)** | | **Orientation: Pick up Packets** | |  |
| **Monday**  **(Jul 1st)** | | **Introduction to Statistics and Computer Software** | | **Dr. Mitchell-Blackwood; Eisenberg** |
| 10:00  12:30 | | Statistics Workshop: Data Manipulation in *Excel*  *(Lunch)*  Statics Workshop: Introduction to *Crystal Ball*  Introduction to Environmental-Infection-Transmission Models  *(Dinner)*  Evening Program Risk and Uncertainty in Water Science | | |
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|  | |
| 6:30 | |
| **Tuesday**  **(Jul 2nd) Overview of QMRA** | | | | **Drs Rose, Gerba, Haas** |
| 8:30 | | *(Breakfast)* Instructions for the Day  Introduction to QMRA Frameworks and Evolution  Water Quality and Health, The Environmental Microbiology Perspective  Developing Frameworks  Introduction to Group Case Studies  *(Lunch)*  Linking Mathematics, Engineering and Microbiology within Water Research (scenarios, data and models).  Discussion with Mentors assigned to Case Studies  *(Dinner)* | | |
| 9:00 | |
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| 12:30 | |
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| 6:30 | |
| **Wednesday**  **(Jul 3rd) Microbiology & Water Research** | | | | **Drs Rose; Gerba** |
| 8:30 | | *(Breakfast)* Instructions for the Day  Microbes as Hazards  Waterborne Disease in the Americas  *(Lunch)*  The Water Microbiome use of Genomics in QMRA  The QMRA WIKI Knowledge Sharing System  Discussions with Lecturers  *(Dinner)* | | |
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| 12:30 | |
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| 6:30 | |
| **Thursday**  **(Jul 4th) Dose-Response Assessment** | | | | **Drs. Haas; Mitchell-Blackwood** |
| 8:30 | (*Breakfast)* Instructions for the Day  Animal Experiments, Human and. Epidemiological Studies  Dose-Response Models  *(Lunch)*  Monte-Carlo Simulation (Crystal Ball)  Work on Case studies  (*Dinner*) | | | |
| 10:00 |
| 11:00 |
| 12:30 |
| 2:00 |
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| 6:30 |

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| **Friday**  **(Jul 5th) Exposure Assessment** | | | | | **Drs. Ashbolt; Betancourt; Gerba** |
| 8:30 | *(Breakfast)* Instructions for the Day  Methods for Detection of Microorganisms  Using new Molecular Tools  Exercise: False Positive and False Negatives (Specificity and Sensitivity)  Exercise: Measuring Microbes (Recovery & Inactivation)  Using Persistence Models; Persistence of DNA  Fate & Transport Models: Water Distribution (CFD)  *(Lunch)*  Work on Case Studies  *(Dinner)* Water Models for Microorganisms | | | | |
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| 12:30 |
| 6:30 |
| **Saturday**  **(Jul 6th)** | | | **Science Career Pathways Retreat** | | **ALL** |
|  | | | Field Trip | |  |
|  | | | Mentoring Rotation Discussions | |  |
|  | | | **See Mentoring Plan** | |  |
| **Sunday**  **(Jul 7th)** | | | **Exposure Assessment** | | **Drs. Gurian; Haas; Jimenez** |
| 8:30 | | | (*Breakfast)* Instructions for the Day | |  |
|  | | | Maximum Likelihood Fitting | |  |
|  | | | Bootstrap Uncertainty Analysis | |  |
| 12:30 | | | *(Lunch)* | |  |
|  | | | Fate and Transport: Biosolids Tool  Recreational Waters: The Beach App | |  |
|  | | | Work On Case Studies | |  |
| 6:30 | | | *(Dinner)* | |  |
| 7:30-9:00 | | | Discussions with Lecturers Update QMRAwiki | |  |
| **Monday**  **(Jul 8th) Risk Characterization & Decision Science** | | | | | **Drs. Gurian;**  **Mitchell-Blackwood; Eisenberg** |
| 8:30 | | (*Breakfast)* Instructions for the Day | |  | |
|  | | Environmental Infectious Disease Transmission Modeling | |  | |
| 12:30 | | *(Lunch)* | |  | |
|  | | Decision Science Risk Perception, Communication, and Management | |  | |
| 6:30 | | *(Dinner)* | |  | |
| 7:30-9:00 | | Discussion with Lecturers | |  | |
| **Tuesday**  **(Jul 9th) Case Study Working Day** | | | | | **ALL** |
| 8:30 | | | *(Breakfast)* Instructions for the Day  Working on Case Studies  (*Lunch)*  Update QMRAwiki | | |
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| 12:30 | | |
| 1:30 | | |
| **Wednesday**  **(Jul 10th) QMRA Symposium** | | | | |  |
| 8:30 | | | *(Breakfast)* Instructions for the Day  Presentations of Case Studies  (*Lunch)*  Closing and Awarding of Certificates | | |
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| 12:30 | | |
| 1:30 | | |