

**Lecture Titles and Time Allotted**  
**July 24 – 28, 2023**

| <b>Topic No.</b> | <b>Topic Title</b>   | <b>Lecturer</b>                | <b>Time Allotted (Hours)</b> |
|------------------|--|--------------------------------|------------------------------|
| 1                | Growth and Metabolism  | C.L. Cooney                    | 2.5                          |
| 2                | Recombinant Organisms for Bioprocesses   | K.L.J. Prather                 | 1.5                          |
| 3                | Bioreactor Operations: Microbial Fermentations                                       | M.Z. Rosenberg                 | 1.5                          |
| 4                | Bioreactor Operations: Mammalian Cell Culture  | M.Z. Rosenberg                 | 2.0                          |
| 5                | Scale-Up of Bioreactors: Mammalian and Microbial Systems                             | M.Z. Rosenberg                 | 2.0                          |
| 6                | Molecular Biology in Bioprocess Development  | K.L.J. Prather                 | 1.0                          |
| 7                | Media and Air Sterilization  | C.L. Cooney                    | 1.5                          |
| 8                | Modeling and Bioprocess Monitoring   | K.L.J. Prather                 | 3.0                          |
| 9                | Perfusion Technologies   | J.C. Love                      | 1.5                          |
| 10               | -Omics-Guided Bioprocess Development   | A.M. Lewis                     | 1.5                          |
| 11               | Cell-free Biosynthesis (Remote)  | M.C. Jewett                    | 1.5                          |
| 12               | Power Requirement in Bioreactors   | J.C. Leung                     | 1.0                          |
| 13               | Oxygen Transfer and Shear in Bioreactors   | J.C. Leung                     | 2.0                          |
| 14               | Control, Automation and Data Analytics   | A. Maloney, J. Parra, S. Suman | 1.5                          |
| 15               | Single-Use Bioreactors   | J.C. Leung                     | 1.5                          |
| 16               | Bioprocess Design, Simulation and Economics  | C.L. Cooney                    | 1.5                          |
| <b>Start</b>     | <b>9 AM Mon. – Fri.</b>  |                                |                              |
| <b>End</b>       | <b>Lectures end at 5 or 5:30 PM Mon.-Thur.<br/>Course Ends at 12:30 PM on Friday</b> | <b>Total Hours of Lectures</b> | <b>27</b>                    |

**Fermentation Technology Lecture Schedule**  
**July 24 – 28, 2023**  
**MIT**

| <b>Monday</b>   | <b>Tuesday</b>                            | <b>Wednesday</b>                  | <b>Thursday</b>                                    | <b>Friday</b>                      |
|---|---|-----------------------------------|--|------------------------------------|
| 9:00-9:30<br>Introduction<br>(KLJP)                   | 9:00-10:30<br>Topic #4<br>(MZR)           | 9:00-10:30<br>Topic # 8<br>(KLJP) | 9:00-10:30<br>Topic #11<br>(MCJ)                   | 9:00-10:30<br>Topic #15<br>(JCL-1) |
| 9:30-10:30<br>Topic #1<br>(CLC)                       | <b>10:30-11:00<br/>Break</b>              | <b>10:30-11:00<br/>Break</b>      | <b>10:30-11:00<br/>Break</b>                       | <b>10:30-11:00<br/>Break</b>       |
| <b>10:30-11:00<br/>Break</b>                          | 11:00-12:30<br>Topic #4/Topic #5<br>(MZR) | 11:00-12:30<br>Topic #8<br>(KLJP) | 11:00-12:00<br>Topic #12<br>(JCL-1)                | 11:00-12:30<br>Topic #16<br>(CLC)  |
| 11:00-12:30<br>Topic #1<br>(CLC)                      | <b>12:30-1:30<br/>Lunch</b>               | <b>12:30-1:30<br/>Lunch</b>       | 12:00-12:30<br>Topic #13<br>(JCL-1)                | <b>12:30<br/>End of<br/>Course</b> |
| <b>12:30-1:30<br/>Lunch</b>                           | 1:30-2:30<br>Topic #5<br>(MZR)            | 1:30-3:00<br>Topic #9<br>(JCL-2)  | <b>12:30-1:30<br/>Lunch</b>                        |                                    |
| 1:30-3:00<br>Topic #2<br>(KLJP)                       | 2:30-3:30<br>Topic #6<br>(KLJP)           | <b>3:00-3:30<br/>Break</b>        | 1:30-3:00<br>Topic #13<br>(JCL-1)                  |                                    |
| <b>3:00-3:30<br/>Break</b>                            | <b>3:30-4:00<br/>Break</b>                | 3:30-5:00<br>Topic #10<br>(AML)   | <b>3:00-3:30<br/>Break</b>                         |                                    |
| 3:30-5:00<br>Topic #3<br>(MZR)                        | 4:00-5:30<br>Topic #7<br>(CLC)            |                                   | 3:30-5:00<br>Topic #14<br>(AM/JP/SS)               |                                    |
|   |   |                                   |  |                                    |
| <b>6:00-8:30<br/>Reception<br/>Samberg Conf. Ctr.</b> | <b>Evening<br/>Free</b>                   | <b>Evening<br/>Free</b>           | <b>6:00-9:00<br/>Dinner<br/>Samberg Conf. Ctr.</b> |                                    |

**Initial Keys of Lecturers:**

**CLC:** Charles L. Cooney  
**MCJ:** Michael C. Jewett  
**JCL-1:** James C. Leung  
**AML:** Amanda M. Lewis  
**JCL-2:** J. Christopher Love  
**AM:** Andrew Maloney  
**JP:** Juan Parra  
**KLJP:** Kristala L.J. Prather  
**MZR:** Morris Z. Rosenberg  
**SS:** Sneha Suman