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| **Institution:** | Austin Community College | **Award Title:** | Certificate II Biomanufacturing |
| **Program:** | Biotechnology | **Award CIP Code:** | 41.0101 |

| **Key Activities to WECM Courses Matrix** | | | | | | | | | | | | |
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| **Key Activity #/Statement** | **WECM Course Rubric, Number and Title** | | | | | | | | | | | |
| BIOL 1414  Introduction to Biotechnology I | BIOL 1415  Introduction to Biotechnology II | BIOL 1471  Undergraduate Rsearch | BITC 2441  Molecular Techniques | BITC 2431  Cell Culture Techniques | BITC 1491  Introduction to Biomanufacturing |  |  |  |  |  |  |
| 1.1 Follow Standard Operating Procedures (SOPs) | X | X |  | X | X | X |  |  |  |  |  |  |
| 1.2 Fill out batch records |  |  |  |  |  | X |  |  |  |  |  |  |
| 1.3 Document and analyze data | X | X | X | X | X | X |  |  |  |  |  |  |
| 1.4 Write technical reports |  |  | X |  |  |  |  |  |  |  |  |  |
| 1.5 Maintain equipment logbooks |  | X | X | X | X | X |  |  |  |  |  |  |
| 1.6 Participate in change control activities |  |  |  |  |  | X |  |  |  |  |  |  |
| 1.7.Obtain and review trend and benchmark data |  |  |  |  |  | X |  |  |  |  |  |  |
| 1.8 Assist in execution of validation procedures |  |  |  |  |  | X |  |  |  |  |  |  |
| 2.1 Clean laboratory environment | X | X | X | X | X | X |  |  |  |  |  |  |
| 2.2 Attend company safety and security training | X | X | X | X | X | X |  |  |  |  |  |  |
| 2.3 Report unsafe conditions | X | X | X | X | X | X |  |  |  |  |  |  |
| 2.4 Maintain laboratory security | X | X | X | X | X | X |  |  |  |  |  |  |
| 3.1 Clean and maintain basic laboratory equipment |  | X | X |  |  |  |  |  |  |  |  |  |
| 3.2 Clean and maintain cell culture and fermentation equipment |  |  |  |  |  | X |  |  |  |  |  |  |
| 3.3 Perform calibration of instruments |  | X | X | X | X | X |  |  |  |  |  |  |
| 3.4 Perform preventive maintenance and schedule vendor maintenance |  |  |  |  |  | X |  |  |  |  |  |  |
| 3.5 Perform equipment qualification |  |  |  |  |  | X |  |  |  |  |  |  |
| 3.6 Participate in installation and modification of equipment |  |  |  |  |  | X |  |  |  |  |  |  |
| 4.1. Order materials |  | X | X |  |  |  |  |  |  |  |  |  |
| 4.2. Store materials |  | X | X |  |  |  |  |  |  |  |  |  |
| 4.3 Prepare glassware |  | X | X |  |  | X |  |  |  |  |  |  |
| 4.4. Prepare equipment |  | X | X |  |  | X |  |  |  |  |  |  |
| 4.5. Make media, solutions, and buffers |  | X | X |  |  | X |  |  |  |  |  |  |
| 4.6 Store media, solutions, buffers, and reagent batches |  | X | X |  |  | X |  |  |  |  |  |  |
| 5.1 Prepare working cell bank |  |  |  |  | X | X |  |  |  |  |  |  |
| 5.2 Initiate starter cultures |  |  |  |  |  | X |  |  |  |  |  |  |
| 5.3 Perform scale-up operation |  |  |  |  |  | X |  |  |  |  |  |  |
| 5.4 Inoculate seed reactor and perform media addition |  |  |  |  |  | X |  |  |  |  |  |  |
| 5.5 Monitor culture |  |  |  |  | X | X |  |  |  |  |  |  |
| 5.6 Execute sampling and assess material for process release |  |  |  |  |  | X |  |  |  |  |  |  |
| 5.7 Perform process release for product |  |  |  |  |  | X |  |  |  |  |  |  |
| 6.1 Perform microbiology testing |  |  | X |  |  |  |  |  |  |  |  |  |
| 6.2 Perform chemical testing |  |  | X |  |  |  |  |  |  |  |  |  |
| 6.3 Perform upstream testing |  |  |  |  |  | X |  |  |  |  |  |  |
| 6.4 Perform downstream testing |  |  |  |  |  | X |  |  |  |  |  |  |
| 6.5 Troubleshoot aberrant results or parameters |  | X | X | X | X | X |  |  |  |  |  |  |
| 7.1 Prepare purification equipment |  |  | X |  |  | X |  |  |  |  |  |  |
| 7.2 Receive product from upstream processing |  |  |  |  |  | X |  |  |  |  |  |  |
| 7.3 Filter product as necessary |  |  |  |  |  | X |  |  |  |  |  |  |
| 7.4 Perform chromatography steps |  |  |  |  |  | X |  |  |  |  |  |  |
| 7.5 Remove contaminants, and concentrate product as necessary |  |  |  |  |  | X |  |  |  |  |  |  |
| 7.6 Bulk fill purified product for storage |  |  |  |  |  | X |  |  |  |  |  |  |
| 7.7 Complete final formulation |  |  |  |  |  | X |  |  |  |  |  |  |
| 8.1 Communicate with co-workers to ensure quality work |  | X | X | X | X | X |  |  |  |  |  |  |
| 8.2 Provide technical assistance to customers |  |  |  |  |  | X |  |  |  |  |  |  |
| 8.3 Provide training to co-worker |  |  |  |  |  | X |  |  |  |  |  |  |
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