# **Research (Thesis) Emphasis Curriculum – 2021/2022 Academic Year**

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| --- | --- | --- | --- |
| **Course** | **Description** | **Credits** |  |
|  | **Required Courses** |  |  |
| *Core CMB courses*CMB 520  | Lab Techniques | 3 |  |
| CMB 501  | Scientific Communication  | 3 |  |
| CMB 505  | Advanced Cell Biology  | 3 |  |
| CMB 506  | Advanced Molecular Biology  | 3 |  |
| CMB 509 | Responsible Conduct of Research | 1 |  |
|  |  |  |  |
| *Research and Thesis* |  |  |  |
| CMB 695  | Thesis Research Credits | 6-9 |  |
|  |  |  |  |
| *Biostatistics* |  |  |  |
| STA 622  | Statistical Methods for Biologists\* | 3 |  |
| **Sub-Total** | **Total Required Credits** | **22-25** |  |
|  |  |  |  |
| **Sub-Total** | **Total Elective Credits** | **10-13** |  |
|   |   |   |  |
| **Grand Total** | **Total Required and "Elective" Credits** | **35** |  |
| \* STA 610-01 | Statistics for Health Professions | 3 |  |
|  | (Allowed substitution for STA 622) |  |  |
|  |  |  |  |
|  |  |  |  |

**Elective Course Offerings for MS Research Emphasis (Thesis) -** keep in mind that other departments might have graduate courses of interest to you (Biomedical Sciences (BMS), Biology (BIO), etc.).

CMB 551 Bioinformatics: Tools and Techniques for Life Scientists (3 cr), Fall

CMB 552 Computer Modeling & Drug Design (3 cr), Winter

CMB 560 Genomics and Molecular Diagnostics (3 cr), Fall

CMB 585 Molecular Ecology (3 cr), Winter

CMB 610 Foundations of Biotechnology (3 cr), Fall & Winter

CMB 620 Cell Culture & Bioprocessing (3 cr), Winter

CMB 626 Advanced Research Applications in Nucleic Acids (4 cr), Fall & Winter

CIS 661 Medical & Bioinformatics (3 cr), Fall & Winter

STA 616 Statistical Programming (3 cr), Winter

PSM 650 Ethics and Professionalism (3 cr), Fall, Winter & Spring/Summer

**Bioinformatics & Genomics Certificate option** – This certificate requires 3 core courses, CMB 551, CMB 552, & CMB 560, plus one elective from a list of options. Check out this link for more information (scroll down to reach the MS info): <https://www.gvsu.edu/cmb/certificates-93.htm>

**Research (Thesis) Emphasis – *example schedule***

***Be sure to confirm the time & location of courses in Banner, particularly in these COVID times…..***

|  |  |  |  |
| --- | --- | --- | --- |
| **Semester/Course** | **Credits** | **When/where** | **Additional course offerings** |
| **Fall – 1st year** |  |  |  |
| *CMB 501 Scientific Communication* | 3 | W 9-12:50, 1173 KHS |  |
| *CMB 520 Lab Techniques* | 3 | M 11-2:50, 3302 KHS |  |
| One additional course | 2-3  |  | CMB 505, CMB 610, CMB 551, CMB 560, PSM 650, STA 610-01 OR 622, CIS 661 |
| **Total** | **8-9** |  |  |
|  |  |  |  |
| **Winter**  |  |  |  |
| *CMB 506 Advanced Molecular Biology* | 3 | W 6-8:50, 710 EC | CMB 509 (1 cr), CMB 610, CMB 552, CMB 626, STA 610-01, CIS 661, PSM 650 |
| *CMB 695 Thesis* | 1-3  |  |  |
| *STA 622 or STA 610-01* | 3 |  |  |
| **Total** | **7-9** |  |  |
|  |  |  |  |
| **Spring/Summer**  |  |  |  |
|  |  |  | PSM 650, PSM 662 (2 cr) |
| **Total** | **0-6** |  |  |
|  |  |  |  |
| **Fall – 2nd year** |  |  |  |
| CMB 505 Advanced Cell Biology | 3 |   |  |
| CMB 626 Advanced Research Applications in Nucleic Acids | 4 |  |  |
| 1 additional course***(\*do not take > 9-10 credits total if taking CMB 626)*** | 2-3 |  | CMB 610, CMB 551, CMB 560, PSM 650, PSM 662 (2 cr), STA 610-01 or 622, CIS 661 |
| **Total** | **9-10** |  |  |
|  |  |  |  |
| **Winter** |  |  |  |
| 2-3 additional courses***(\*do not take > 9-10 credits total if taking CMB 626)***  |  |  | CMB 509 (1 cr), CMB 610, CMB 552, CMB 626, STA 610-01, CIS 661, PSM 650 |
| **Total** | **8-11** |  |  |
|  |  |  |  |
| **Spring/Summer**  |  |  |  |
| Courses if necessary | 2-6 |  | PSM 650, PSM 662 (2 cr) |
|  |  |  |  |