# **Research (Thesis) Emphasis Curriculum – 2019/2020 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 of Biomolecules (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

CMB 680-01 PSM Planning & Leadership (2 cr), Fall

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***

|  |  |  |  |
| --- | --- | --- | --- |
| **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, CMB 680-01 (2 cr), 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, CMB 680-01 (2 cr), 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) |
|  |  |  |  |