# MASTER OF COMPUTATIONAL ENGINEERING, OPTIMIZATION, MACHINE VISION, AND DECISION MAKING TRACK

## Curriculum

| Code | Title | Credit Hours |
|---|---|---|
| **Core Courses** | | **(9)** |
| Select nine credit hours from the following courses: | | 9 |
| BME 522 | Mathematical Methods in Biomedical Engineering | 3 |
| BME 553 | Advanced Quantitative Physiology | 3 |
| CHE 506 | Entrepreneurship and Intellectual Property Management | 3 |
| CHE 536 | Computational Techniques in Engineering | 3 |
| ECE 505 | Applied Optimization for Engineers | 3 |
| ECE 511 | Analysis of Random Signals | 3 |
| ECE 566 | Machine and Deep Learning | 3 |
| MATH 577 | Computational Mathematics I | 3 |
| MATH 581 | Finite Element Method | 3 |
| MMAE 451 | Finite Element Methods in Engineering | 3 |
| MMAE 501 | Engineering Analysis I | 3 |
| MMAE 502 | Engineering Analysis II | 3 |
| **Optimization, Machine Vision, and Decision Making Courses** | | **(12)** |
| Select 12 credit hours from the following courses: | | 12 |
| ECE 501 | Artificial Intelligence and Edge Computing | 3 |
| ECE 510 | Internet of Things and Cyber Physical Systems | 3 |
| ECE 533 | Robust Control | 3 |
| ECE 535 | Discrete Time Systems | 3 |
| ECE 563 | Artificial Intelligence in Smart Grid | 3 |
| ECE 565 | Computer Vision and Image Processing | 3 |
| ECE 566 | Machine and Deep Learning | 3 |
| ECE 567 | Statistical Signal Processing | 3 |
| ECE 597 | Special Problems | 1-6 |
| **Elective Courses** | | **(9)** |
| Select nine credit hours from the following courses: [1] | | 9 |
| BME 445 | Quantitative Neural Function | 3 |
| BME 522 | Mathematical Methods in Biomedical Engineering | 3 |
| BME 523 | Cell Biomechanics: Principles and Biological Processes | 3 |
| BME 524 | Quantitative Aspects of Cell andTissue Engineering | 3 |
| BME 525 | Introduction to Medical Devices, BioMEMS and Microfluidics | 3 |
| BME 538 | Neuroimaging | 3 |
| BME 553 | Advanced Quantitative Physiology | 3 |
| BME 597 | Special Problems | 1-6 |
| CAE 530 | Finite Element Method of Analysis | 3 |
| CAE 534 | Computational Techniques in Finite Element Analysis | 3 |
| CAE 535 | Nonlinear Finite Element Analysis | 3 |
| CAE 597 | Special Problems | 1-6 |
| CHE 536 | Computational Techniques in Engineering | 3 |
| CHE 439 | Numerical and Data Analysis | 3 |
| CHE 506 | Entrepreneurship and Intellectual Property Management | 3 |
| CHE 516/BME 517 | Technologies for Treatment of Diabetes | 3 |

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|---|---|---|
| CHE 535 | Applications of Mathematics to Chemical Engineering | 3 |
| CHE 536 | Computational Techniques in Engineering | 3 |
| CHE 560 | Statistical Quality and Process Control | 3 |
| CHE 585 | Drug Delivery | 3 |
| CHE 597 | Special Problems | 1-6 |
| ECE 505 | Applied Optimization for Engineers | 3 |
| ECE 511 | Analysis of Random Signals | 3 |
| ECE 533 | Robust Control | 3 |
| ECE 535 | Discrete Time Systems | 3 |
| ECE 563 | Artificial Intelligence in Smart Grid | 3 |
| ECE 565 | Computer Vision and Image Processing | 3 |
| ECE 566 | Machine and Deep Learning | 3 |
| ECE 567 | Statistical Signal Processing | 3 |
| ECE 597 | Special Problems | 1-6 |
| MATH 577 | Computational Mathematics I | 3 |
| MATH 581 | Finite Element Method | 3 |
| MMAE 450 | Computational Mechanics II | 3 |
| MMAE 451 | Finite Element Methods in Engineering | 3 |
| MMAE 501 | Engineering Analysis I | 3 |
| MMAE 502 | Engineering Analysis II | 3 |
| MMAE 517 | Computational Fluid Dynamics | 3 |
| MMAE 518 | Spectral Methods in Computational Fluid Dynamics | 3 |
| MMAE 532 | Advanced Finite Element Methods | 3 |
| MMAE 570 | Computational Methods in Materials Science and Engineering | 3 |
| MMAE 594 | Project for Master of Engineering Students | 1-6 |
| MMAE 597 | Special Topics | 1-6 |
| **Total Credit Hours** | | **30** |

[1]    Course must not have been used towards the core course or specialization course requirements.