Instructor: Dr. Prince Chidyagwai  
Office: Knott Hall 301d  
Office Phone: 410-617-2710  
Email: pchidyagwai@loyola.edu  
Website: http://math.loyola.edu/~chidyagp  
Office Hours: MW 10:00 - 11:00AM, Th 3:30-4:00 PM or by appointment

Textbook: *Numerical methods by Anne Greenbaum & Timothy P. Chartier.*

Prerequisites: MA 301 (Introduction to Linear Algebra) and MA 302 (Programming in Mathematics)

Course Description: This course will emphasize the development of computational techniques that provide stable and efficient solutions to various mathematical problems in science and engineering. We will cover the following topics:

- Numerical solutions of scalar non-linear equations.
- Floating point arithmetic.
- Direct and iterative methods for solving linear systems.
- Interpolation
- Monte Carlo Methods

Course Objectives:

1. Provide an overview of various computational tools and increase the ability to use proper tools for a given situation.
2. Improve the ability to work independently to formulate algorithms and implement them using MATLAB.
3. Provide computational experiences that can be utilized in other courses and beyond the classroom.

Exams: There will be two in-class exams and a final exam.

Grading: Homework - 25%, Semester Exams - 40%, Computational Projects - 10%, Final Exam - 25%.
Final grades will be determined according to the following scale:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>93-100</td>
<td>A</td>
</tr>
<tr>
<td>90-92</td>
<td>A-</td>
</tr>
<tr>
<td>87-89</td>
<td>B+</td>
</tr>
<tr>
<td>83-86</td>
<td>B</td>
</tr>
<tr>
<td>80-82</td>
<td>B-</td>
</tr>
<tr>
<td>77-79</td>
<td>C+</td>
</tr>
<tr>
<td>73-76</td>
<td>C</td>
</tr>
<tr>
<td>70-72</td>
<td>C-</td>
</tr>
<tr>
<td>68-69</td>
<td>D+</td>
</tr>
<tr>
<td>65-67</td>
<td>D</td>
</tr>
<tr>
<td>63-64</td>
<td>D-</td>
</tr>
<tr>
<td>0-62</td>
<td>F</td>
</tr>
</tbody>
</table>

Class participation and improving performance on the exams will be considered when assigning borderline grades.

**Homework:** Homework will be assigned almost weekly in class and posted also posted on the course website. Answers without any justifications are not acceptable. All work must include a detailed description of your solution technique for theoretical problems. In the case of computational problems email me your code.

**Computational Projects:** MATLAB computational projects will be assigned at the end of each major topic.

**Academic Integrity and Standards of Conduct:** The guidelines of academic integrity and standards of conduct are presented in the Undergraduate catalogue. The Loyola University Honor Code states that all students of the Loyola community have been equally entrusted by their peers to conduct themselves honestly on all academic assignments. In this class you may work with your peers on assigned homework. However, you should write up submissions by yourself. You may not consult your books or notes for quizzes and exams. Please refer to the Community Standards Handbook for more information and further clarification of the honor code standards, type of violations, adjudication process, and sanctions that may be imposed for violations. The use of cellphones is prohibited during class so please turn off your cellphone.

**Extra Help:** Do not hesitate to come to my office during office hours or by appointment to discuss a homework problem or any aspect of the course.

**Important Dates:**

- Add/Drop Deadline: Friday, September 7
- Withdrawal Deadline: Friday, November 9
- Exam 1: Wednesday, October 10 (in class)
- Exam 2: Wednesday, November 14 (in class)
- Final Exam: Friday, December 14, 1:00 PM

**Student Athletes:** Please provide me with your athletic travel letters indicating when you will not be able to make it to class due to athletic commitments. You will be required to make up any assignments or exams that you miss.

**Learning Disabilities:** Any student with a disability documented with the Disability Support Service Office (DSS) requiring accommodations in this course is encouraged to contact me as soon as possible. If you have a disability that has not yet been documented, please contact the DSS Office (410-617-2602) for assistance.