Math 115: Pre Calculus I Item #6314

8am daily in 17-201/104

| Instructor: | Dusty Wilson |
|-----------------|--|
| Office: | 18-214 |
| Phone: | 206-878-3710 ext. 3338 |
| Office Hours: | 11 – 11:50am M, W. 1 – 1:50pm T, Th. 9am Th. Also by appointment or drop-in. |
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<u>Course Description</u>: (5 credits) Study of functions; cover sets, relations, equations of circles; function study including domain, range, inverses, 1-1, algebra of functions. Types of functions studied: polynomial, exponential, logarithmic, rational, and absolute value; introduction to mathematical induction proofs and sequences and series.

Course Objectives: The student will be able to ...

- 1. Manipulate functional notation and find domains and ranges of functions.
- 2. Recognize and graph polynomial functions, perform synthetic division.
- 3. Recognize and graph rational functions.
- 4. Recognize and graph absolute value functions.
- 5. Recognize and graph exponential functions.
- 6. Recognize and graph logarithmic functions.
- 7. Find zeroes of polynomials.

- 8. Determine 1-1 functions and find their inverses.
- 9. Solve equations and inequalities using principles of functions.
- 10. Apply the above knowledge to verbal problems.
- 11. Compose proofs by mathematical induction.
- 12. Understand the basic topics relating to sequences and series.
- 13. Know when and how to use a graphing calculator.

Text: Precalculus, Functions and Graphs. Barnett,. Ziegler, and Byleen. Bring book to class!

Prerequisite: Math 097 with a minimum grade of 2.0 or COMPASS algebra score of 71.

<u>Calculators</u>: A graphing calculator is required for this course.

- i. The TI-83 or TI-83 plus is recommended. The use of symbolic calculators such as the TI-89 and TI-92 will not be allowed during exams. Furthermore, the use of all calculators may be prohibited during some exams (forewarning will be given).
- ii. Calculators may be rented from the math department on a first come first serve basis. To rent a calculator, pay the rental fee at the cashier in building 6 and then submit the form to me.

Homework: The format and grading criteria for homework is as follows.

- i. **Format:** Homework should be done on Engineering Paper (Engineer's Computation Pad in the Bookstore). Write your name, the date, and section number in the upper-right corner. Multiple page assignments must be stapled in the upper-left corner. Each problem should be labeled with the section *and* problem number. Your work should be done neatly in pencil and you should generously space each problem.
- ii. **Grading:** Your homework grade will be based on the number of problems you solve correctly. Homework will be graded for format, accuracy, and the clarity of the supporting work. You will be given a bonus of 25 points that will take the place of any missed assignments. *Late assignments will not be accepted*.

<u>Project</u>: There will be a project involving data collection and analysis.

i. The title of the project is, "The Hand of the Thief."

<u>**Tests**</u>: There will be nine tests given during the quarter.

- i. The exams will be cumulative, but will emphasize the material covered since the last test.
- ii. Your best seven out of the nine tests will count towards your final grade. If you miss a test, a score of 0% will be assigned. All tests must be taken during the scheduled class time. *No make-up tests*.
- iii. Spoken and written communication as well as sharing of calculators during exams is prohibited.

<u>Final Exam</u>: A comprehensive final exam will be held in the regular class meeting room from 8 - 9:50am on *Tuesday, December 10th*. No make-ups will be given for the final exam - make your plans accordingly. The final exam is mandatory and a grade of 0.0 may be assigned at the instructor's discretion to those who fail to take the final exam.

<u>Grading</u>: Homework: 10%, Project: 10%, Exams: 50%, Final Exam: 30%. GPA's will be given according to:

| 90-100% | 4.0 | %%% | GPA | %%% | GPA | %%% | GPA | %%% | GPA |
|---------|-----|-----|-----|-----|-----|-----|-----|-------|-----|
| 89% | 3.9 | 81% | 3.1 | 73% | 2.3 | 65% | 1.5 | 57% | 0.7 |
| 88% | 3.8 | 80% | 3.0 | 72% | 2.2 | 64% | 1.4 | 56% | 0.6 |
| 87% | 3.7 | 79% | 2.9 | 71% | 2.1 | 63% | 1.3 | 55% | 0.5 |
| 86% | 3.6 | 78% | 2.8 | 70% | 2.0 | 62% | 1.2 | 54% | 0.4 |
| 85% | 3.5 | 77% | 2.7 | 69% | 1.9 | 61% | 1.1 | 53% | 0.3 |
| 84% | 3.4 | 76% | 2.6 | 68% | 1.8 | 60% | 1.0 | 52% | 0.2 |
| 83% | 3.3 | 75% | 2.5 | 67% | 1.7 | 59% | 0.9 | 51% | 0.1 |
| 82% | 3.2 | 74% | 2.4 | 66% | 1.6 | 58% | 0.8 | 0-50% | 0.0 |

Policies and Notes:

- i. **Attendance**: You are responsible for all material covered in class including all announced changes to the schedule and assigned course work. (If you miss class, *you* are still responsible for everything in class).
- ii. **Cell Phones**: The use of cell phones, pagers, and palm pilots in class is strictly prohibited. Failure to comply may result in your removal from the classroom.
- iii. **Corrections**: Changes and corrections to grading must take place during the week following the original distribution of the graded material. It is your responsibility to confirm accurate grading and bring it to my attention in a timely fashion.
- iv. **Tutor Center**: Cost-free individual and group mathematics tutoring is available at the *Tutoring Center*. The *Tutor Center* is located in building 19, room 206.
- Academic Dishonesty: Cheating, plagiarism, and other forms of academic dishonesty are unacceptable at Highline Community College and may result in lower grades and/or disciplinary action. It is both your right and responsibility to be familiar with the document entitled: <u>Student Rights and Responsibilities</u> code WAC 1321-1210 adopted by the Board of Trustees of Community College District 9 on July 9, 1992. This is available in the counseling center.
- vi. **Special Concerns**: If you have any special concerns about this class, please talk to me personally in my office. The more I know about you individually, the more I can help you be successful in this course. If you need course adaptations or accommodations because of dis-Ability; if you have emergency medical information to share with me; or if you need special arrangements in case the building must be evacuated, please provide me with the Letter of Accommodation you have received from the Office of Access Services. Access Services is located in Building 6 in the Student Development Center.
- vii. **Important Dates**: October 11th: last day to drop without incurring a "W." November 27th: last day to withdraw with a drop privilege.

| Calendar: The Fall 2002 calendar is as follows: | (This schedule is subject to change). |
|---|---------------------------------------|
|---|---------------------------------------|

| Monday | Tuesday | Wednesday | Thursday | Friday |
|-----------------------------|------------------------------|---|---|-----------------------------|
| September 23 – Week 1 | 24 | 25 | 26 | 27 |
| 1.1, 2: Linear Equations | 1.3: Linear Inequalities | 1.4: Absolute Value | 1.5, 6: Quadratics and i | 1.7: Quadratics in Disguise |
| | | | | |
| 30 – Week 2 | October – 1 | 2 | 3 | 4 |
| Test 1 | 1.8: Rational Inequalities | 2.1 (1): Basic Tools | 2.1 (2): Basic Tools | Test 2 |
| | | 1.8 HW Due Part 1 of the project due. | | 2.1 HW Due |
| 7 – Week 3 | 8 | 9 | 10 | 11 |
| 2.2: Lines | 2.3 (1): Functions | 2.3 (2): Functions | 2.4 (1): Graphing Functions | 2.4 (2): Graphing Functions |
| | 2.2 HW Due | Part 2 of the project due. | 2.3 HW Due | Last day to drop w/o "W" |
| 14 – Week 4 | 15 | 16 | 17 | 18 |
| Test 3 | 2.5 (1): Combining Functions | 2.5 (2): Combining Functions | 2.5 (3): Combining Functions | Professional Day |
| 2.4 HW Due | | Part 3 of the project due. | | |
| 21 – Week 5 | 22 | 23 | 24 | 25 |
| Test 4 | 2.6 (1): Inverse Functions | 2.6 (2): Inverse Functions | 2.6 (3): Inverse Functions | Test 5 |
| 2.5 HW Due | | | | 2.6 HW Due |
| 28 – Week 6 | 29 | 30 | 31 | November 1 |
| 3.1: Graphing Polynomials | 3.2 (1): Finding Exact Roots | 3.2 (2): Finding Exact Roots | 3.3: Approximating Roots | Test 6 |
| | 3.1 HW Due | | 3.2 HW Due | 3.3 HW Due |
| 4 – Week 7 | 5 | 6 | 7 | 8 |
| 3.4 (1): Rational Functions | 3.4 (2): Rational Functions | 4.1 (1): Exp Functions | 4.1 (2): Exp Functions | Test 7 |
| | | 3.4 HW Due | | 4.1 HW Due |
| 11 – Week 8 | 12 | 13 | 14 | 15 |
| Veteran's Day | 4.2: <i>e</i> | 4.3 (1): Log Functions | 4.3 (2): Log Functions | 4.3 (3): Log Functions |
| | | 4.2 HW Due | | |
| 18 – Week 9 | 19 | 20 | 21 | 22 |
| Test 8 | 4.4 (1): Log and ln | 4.4 (2): Log and ln | 4.5 (1): Exp and Log Eqts. | 4.5 (2): Exp and Log Eqts. |
| 4.3 HW Due | | | 4.4 HW Due | |
| 25 – Week 10 | 26 | 27 | 28 | 29 |
| 4.5 (3): Exp and Log Eqts. | 10.1: Sequences and Series | Test 9 | Thanksgiving Day | |
| | 4.5 HW Due | Last day to drop w/a "W" | | |
| December 2 – Week 11 | 3 | 4 | 5 | 6 |
| 10.2 (1): Induction | 10.2 (2): Induction | 10.3 (1): Arithmetic and Geo- metric Sequences | 10.3 (2): Arithmetic and Geo- metric Sequences | Review (1) |
| 9 | 10 – Finals Week | 11 | 12 | 13 |
| Review (2) | Final: 8 – 9:50am | | | |
| | | | | |

| # | sec. | day | practice problems | collected problems |
|----------|------|-----|--|--|
| Sept. 23 | 1.2 | | Use any algebraic method: 3,9,15 and practice test problems 1-10 | none |
| Sept. 24 | 1.3 | | 3,9,15,21,27,33,39,45,51,59 and practice test problems 11-20 | none |
| Sept. 25 | 1.4 | | 3,9,15,21,27,45,51,57,69,75,77 and practice test problems 21-30 | none |
| Sept. 26 | 1.5 | | 3,13,21,31,39,47,51,67 and practice test problems 31-40 | none |
| Sept. 27 | 1.7 | | 3,9,15,21,27,33,39,49 and practice test problems 41-50 | none |
| | 1.8 | | 3,9,15,21,24,27,31,39,42,45,49 | 6,12,18,30,48 |
| | 2.1 | 1 | 1,4,7,10,13,16,19,22,25,28,31,34,37,40,43,46,49,52 | |
| | | 2 | 55,58,61,67,73,79,82,88,91 | 8,14,20,26,38,64,70,76,84,94 |
| | 2.2 | | 3,6,9,12,15,18,21,24,27,28,33,39,45,48,49,55,63,64 | 22,30,36,42,54 |
| | 2.3 | 1 | 3,6,9,15,21,27,33,39 | |
| | | 2 | 45,51,69,75,75,83 | 12,18,24,30,36,42,48,54,66,84 |
| | 2.4 | 1 | 3,15,19,20,21,22,23,25,26,27,28,29,33 | |
| | | 2 | 39,41,43,45,46,47,49,50,63,81,82 | 6,18,24,30,36,40,42,44,48,64 |
| | 2.5 | 1 | 1,2,3,7,9,11,13,15,21,27,33 | |
| | | 2 | 39,45,51,57,63 | |
| | | 3 | 71,75,77,81 | 8,12,18,24,30,36,42,48,54,60,66,72,76,78,84 |
| | 2.6 | 1 | 3,7,8,9,11,15,21,27,33 | |
| | | 2 | 39,45,51,57 | |
| | | 3 | 63,69,71,83 | 4,12,20,22,24,30,36,40,42,48,54,60,66,74,82 |
| | 3.1 | | 3,6,9,12,15,21,24,27,33,39,45,57,63 | 18,20,30,36,60 |
| | 3.2 | 1 | 3,6,9,12,15,18,21,24,27,33,39,45,51 | 30,36,42,48,54 |
| | | 2 | none | Handout |
| | 3.3 | | 3,4,6,9,12,15,21,27,33,39,45,47 | 18,24,30,36,42 |
| | 3.4 | 1 | 1,2,3,4,5,6,7,8,9,10,11,12,13,19,21,27,33,39 | |
| | | 2 | 43,45,51,52,55,60,61,63,64,65,73,74 | 16,20,24,30,36,42,48,54,58,66 |
| | 4.1 | 1 | 1,3,5,7,9,11,13,14,15,17,19,21,23,25,27,29,31,33,35 | |
| | | 2 | 34,47,50,55,56,57,58,61,62,67,68, also look at transformations in 37-46 | 12,16,18,20,24,26,28,30,32,36 |
| | 4.2 | | 3,6,9,12,15,21,27,31,33,34,35,37,38,39,40,45,48,51,57,60 | 18,24,30,36,54 |
| | 4.3 | 1 | 1,4,7,13,19,25,31,37,43 | |
| | | 2 | 2,5,8,11,14,17,20,23,26,29,32,35,38,41,44,47,53,59,65,68,71,74 | |
| | | 3 | 3,6,9,12,15,18,21,24,27,30,33,36,39,42,45,48,52,54,57,60,63,66,69 75,81,87,93,99,105,108,111 | 10,16,22,28,34,40,50,56,62,72,78,84,90 96,102 |
| | 4.4 | 1 | 1,4,7,10,13,19,25,31,37,43 | |
| | | 2 | 2,5,11,17,20,23,29,35,38,41,47,50,53,56,59,62,65,68 | 8,14,16,22,26,28,32,34,40,44 |
| | 4.5 | 1 | 1,7,13,19,22,25,31,37 | |
| | | 2 | 5,8,11,17,20,23,29,35,41,44,47,50,53,56,59 | |
| | | 3 | 3,6,9,12,15,18,21,24,27,33,39,42,45,48,57,63,66,69,72,75,78,81,84 87,90,93 | 2,4,10,14,16,26,28,30,32,34,36,38,52,54,60 |
| Nov. 26 | 10.1 | | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,18,21,27,27,30,33,36,43,44,45 46,47,48,49,50,51,52,53,54,55,56,63,64 | none |
| Dec. 2 | 10.2 | 1 | 3,6,9,12,15,18,21,23,24,25,26,27,30,32,35 | none |
| Dec. 3 | | 2 | 36,39,40,43,44,51,52,53,54 | none |
| Dec. 4 | 10.3 | 1 | 3,6,9,12,15,18,21,24,27,30,33,36,39,42,45,48,51,54,66,69,72 | none |
| Dec. 5 | | 2 | 75,78,81,84,87,89,91,92,94,95,97 | none |
| | | | | |

<u>Homework</u>: The homework assignments are as follows:

<u>Note</u>: You as the student are responsible for any in class announcements or modifications to the home-work assignment.