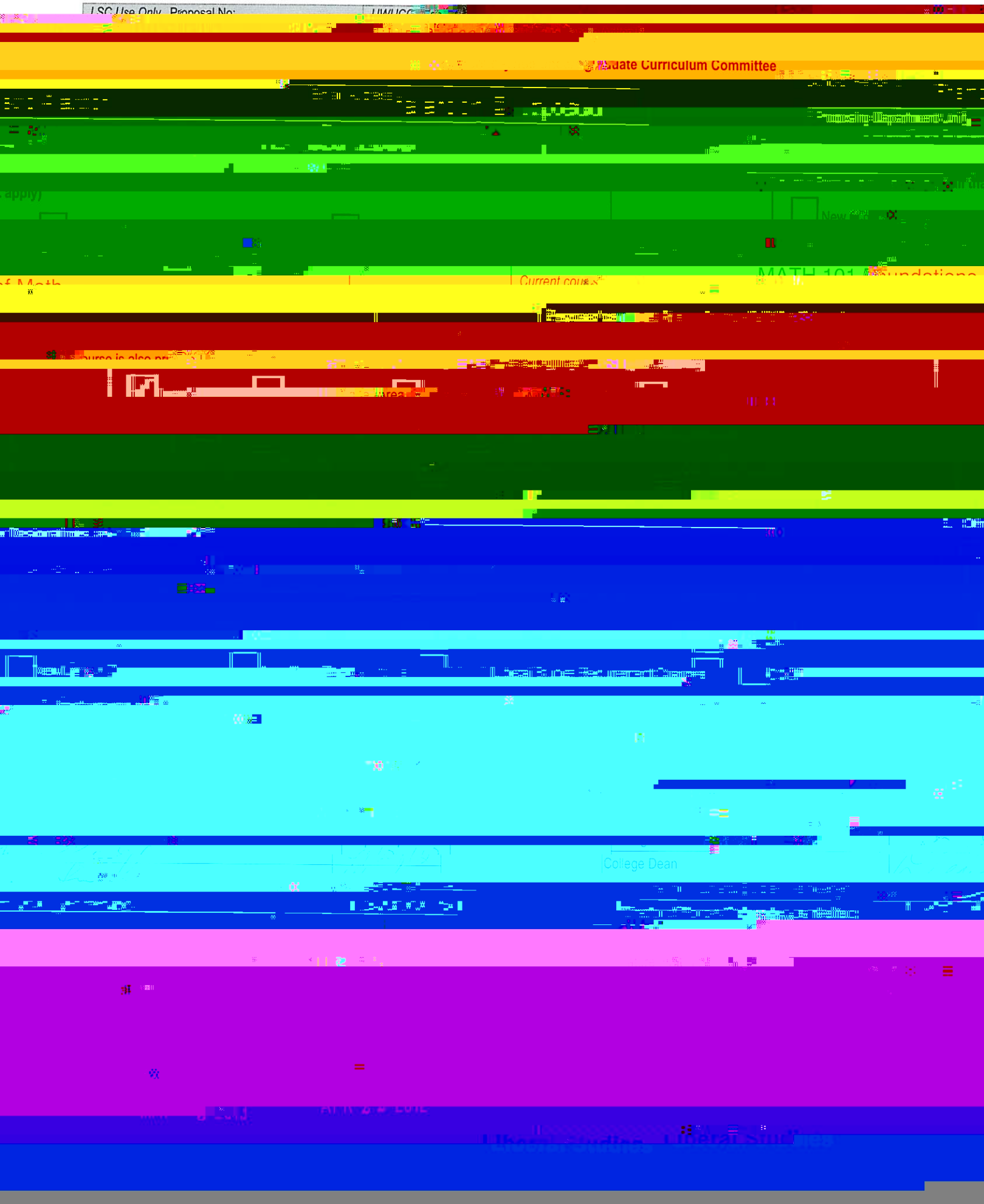
LSC Use Only Proposal No:
Graduate Curriculum Committee
College Dean

Part II: Description of Curriculum Change

1. New Syllabus of Record

I. Catalog Description

MATH 101 Foundations of Mathematics

3c-0l-3cr

Prerequisite: none

Introduces logic and a mathematical way of analyzing problems, develops an appreciation for the nature, breadth, and power of mathematics and its role in a technological society, and introduces useful mathematics or mathematics related to student interests. Possible topics include logic, problem solving, number theory, linear programming, probability, statistics, intuitive calculus, introduction to computer mathematics of finance, game theory

II. Course Outcomes and Assessment (Expected Undergraduate Student Learning Outcomes

Students will learn to use mathematics as an aid to solve problems. Students will learn to

[redacted]

language of mathematics. Students will also appreciate how classroom [redacted]

2. Binary numbers
3. Other number systems

F. Number Theory (6 hours)
1. Divisibility rules
2. Factors
3. Prime numbers
4. Prime factorization
5. Goldbach's Conjecture
6. Fermat's Last Theorem
7. Diophantine equations

This syllabus covers 37 hours, leaving 5 hours for testing and/or review.

There are also 2 hours for a final exam or concluding activity.

IV. Evaluation Methods

30% Three Test (10% for each test) – Test will be given during the regular semester

20% Final Examination. The final examination will be comprehensive and cover both basic competency and critical thinking.

50% Homework, Quizzes, and Projects. These will cover textbook assignments and applications.

V. Grading Scale

Grades will be assigned as follows:

A: 90%-100%
B: 80%-89%
C: 70%-79%
D: 60-69%
F: 0%-59%

VI. Undergraduate Course Attendance Policy

Although there is no formal attendance policy for this class, student learning is enhanced by regular attendance and participation in class discussions. [Note: It is recommended that an attendance policy be developed by individual faculty and included in student syllabi. (See undergraduate catalog for Undergraduate Course Attendance Policy.)]

Green, J., *How Many Women Mathematicians Can You Name?*, Math Horizons, Vol. 9, No. 2, p. 9, 2001

VIII. Special Resource Requirements

Some instructors may require students to purchase a graphing calculator.

IX. Bibliography

Angel, Porter. *A Survey of Mathematics, with Applications*, 6th ed. New York: Addison Wesley, 2001.

Garfunkel, Solomon, et al. *For All Practical Purposes*, 2nd ed. New York: Freeman and company, 1988.

[redacted]

Smith, Karl. *Math for Liberal Arts*, 1st ed., New York: Brooks/Cole, 2010.

Smith, Karl. *The Nature of Mathematics*, 12th ed., New York: Brooks/Cole, 2011.

2. Summary of the proposed revisions

1. Objectives – course objectives were added. There were no objectives in the original syllabus of record.

2. [redacted]

The course is a currently approved Liberal Studies Mathematics course and is being revised to

[redacted]

4. Old Syllabus of Record

I. Catalog Description

MATH 101 Foundations of Mathematics

3 credits
3 lecture hours
(3c-0l-3sh)

Prerequisite: none

Introduces logic and a mathematical way of analyzing problems, develops an appreciation for the

[redacted]

nature, breadth, and power of mathematics and its role in a technological society, and introduces useful mathematics or mathematics related to student interests. Possible topics include logic,

[redacted]

1. Primes, composites, factors, and multiples
2. Ordering, operations, and properties
3. Rational and irrational numbers
4. Applications of decimals and percents
5. Scientific Notation
6. Ratio and proportion

F. Geometry and Measurement

[redacted]

1. Conversions within customary and metric systems
2. Angle measure
3. Shapes and their properties, special triangles
4. Perimeter, circumference, and area
5. Similarity, Pythagorean Theorem
6. Volume

G. Probability
1. Basic definitions
2. "and", "or"
3. Conditional probability

[redacted]

4. Expected Value
5. Odds

H. Statistics
1. Frequency distributions
2. Bar, line, circle graphs; stem and leaf plot
3. Choosing an appropriate graph; dishonest graphs
4. Measures of Central Tendency
5. Measures of Dispersion
6. Measures of Position

[redacted]

7. Normal Curve
8. Scatter plot, correlation, regression

This syllabus covers 37 hours, leaving 5 hours for testing and/or review.

IV. Evaluation Methods

The final grade for the course will be determined as follows:

[redacted]

D: 60-69%
F: 0%-59%

New York: Addison Wesley, 2001.

VI. Special Resource Requirements

Some instructors may require students to purchase a graphing calculator

5. Assignment instructions for one of the major course assignments and a grading rubric or grading criteria for that assignment

6. Answers to the four questions listed in the Liberal Studies Course Approval General Information

A. This course will be taught by multiple instructors. The Mathematics Department's [redacted] objectives. Each instructor is expected to teach the same content from the textbook (or a [redacted]

B. Whenever appropriate, instructors will introduce into the classroom discussion the contributions in mathematics by women and minorities. These discussions, for instance,

Name: SOLUTIONS

Math 101 - Exam 2

Spring 2012

Score: _____/100

- Make sure that your phone is OFF and PUT AWAY. You may use a calculator that has been approved by the instructor.
- Answer each question in the space provided, and clearly mark the answer you want to be graded. Each of the 10 problems is worth 10 points. Partial credit is possible, if work is shown and/or explained clearly.
- Addition and multiplication tables for bases 2, 8, and 16 are provided. You can detach

1. Convert 577 to base 6.

$$\begin{array}{r} 96 \\ 6\overline{)577} \\ -54 \\ \hline 37 \\ -36 \\ \hline 1 \end{array} \qquad \begin{array}{r} 16 \\ 6\overline{)96} \\ -6 \\ \hline 36 \\ -36 \\ \hline 0 \end{array} \qquad \begin{array}{r} 2 \\ 6\overline{)16} \\ -12 \\ \hline 4 \end{array} \qquad \begin{array}{r} 0 \\ 6\overline{)2} \\ -0 \\ \hline 2 \end{array}$$

read remainders backwards

$\boxed{2401_{six}}$

2 pts - division by 6
2 pts - use quotients
2 pts - do last division
2 pts - correct remainders
2 pts - answer

2. Convert 1234_{seven} to decimal.

In base 7, the place values are: $\frac{(343)}{7^3}\ \frac{(49)}{7^2}\ \frac{(7)}{7^1}\ \frac{(1)}{7^0}$

So, we have

$$\begin{array}{lll} 4\times7^0 & 4\times1 & 4 \\ 3\times7^1 & 3\times7 & 21 \\ 2\times7^2 & 2\times49 & 98 \\ 1 & & \end{array} =$$

2 pts - powers of 7
2 pts - correct answer

4. Convert 10011110101011_{two} to octal.

Split the binary number into groups of 3, starting from the right:

10 011 110 101 011

Now, write down the base 10 value for each triple, using $\frac{\text{fours}}{2^2}\ \frac{\text{twos}}{2^1}\ \frac{\text{ones}}{2^0}$:

23653_{eight}

2 pts - groups of 3
2 pts - correct place values
1 pt. each - conversion of triples
1 pt. - answer

5. Perform the addition $1001 + 111$ in base two.

Remember, $1+1 = 10$ in base 2

```
  1 1 1
  1001
+  111
------
 10000
```

2 pts for each column,
2 pts. for "1+1=10"

6. Perform the multiplication $3AD \times 5B$ in hexadecimal.

```
  3 4
  7 8
  3AD
 x 5B
------
  286F
+1261
------
 14E7F
```

B×D = 8F
(B×A)+8 = 6E+8 = 76
(B×3)+7 = 21+7 = 28

5×D = 41
(5×A)+4 = 32+4 = 36
(5×3)+3 = E+3 = 12

1 pt. each multiplication

7. Perform the subtraction 612 – 531 in base 8.

$$\begin{array}{r} {\scriptstyle 1\,1} \\ 5\not{6}\,\not{1}2 \\ -\,5\,3\,1 \\ \hline \end{array}$$

$11-3=6$ in base 8

2 pts. each column

8. The UPC code for a 40 oz. jar of *Jif* peanut butter starts with 0-51500-24090. What is the correct check digit?

add the odd position digits, and multiply by 3:

6 pts. correct division
4 pts. [illegible]

10. Find the smallest nonnegative integer congruent to each of the following:

(a) 412 (mod 5)

$412 \div 5$ has remainder $\boxed{2}$

(b) 5667 (mod 5667)

$5667 \div 5667$ has remainder $\boxed{0}$

(c) -123 (mod 7)

$123 \div 7$ has remainder 4.

[illegible] number [illegible].