FAIRMONT STATE UNIVERSITY™

**Office of the Provost**
1201 Locust Avenue • Fairmont, West Virginia 26554
Phone: (304) 367-4101 • Fax: (304) 367-4902
www.fairmontstate.edu

**MEMORANDUM**

TO: Faculty Senate

FROM: Dr. Susan Ross

DATE: 12/16/2020

SUBJECT: Curriculum Proposal #20-21-01

Incorrectly calculating drug dosages is one of the most common medication errors caused by registered nurses. Some nursing students struggle with correctly calculating medication dosages while other students request additional course work to improve their confidence level in doing so. These courses are designed to enhance the nurses use of critical thinking skills in performing drug calculations, reading drug labels, and provides a foundation for safe medication administration across the lifespan.

cc: Richard Stephens
Lori Schoonmaker
Stephanie Gabor
Laura Ransom
Dr. Laura Clayton
Dr. Theresa Jones
Professor Briana Locante

## PREPARING CURRICULUM PROPOSALS

## INSTRUCTIONS

Draft your proposal in accordance with the guidelines below and the format shown on the following pages. Should any item under the several headings not pertain to your proposal, write N/A. **Number the second and subsequent pages of your proposal.**

Supply the preliminary information about the proposal as indicated below:

**PROPOSAL NUMBER:** Leave this space blank. A number will be assigned to the proposal by the Executive Director of Academic Programs.

**SCHOOL:** Enter the name of the College or School (e.g., *Liberal Arts*), Department (e.g., Language and Literature), and Program (e.g., English).

**PREPARER/CONTACT PERSON:** Enter the name of the person who prepared the proposal and his/her telephone extension number.

**COPIES OF MEMOS SENT TO AFFECTED DEPARTMENTS:** Attach these to the back of your proposal.

**LETTERS OF SUPPORT FROM DEANS OF AFFECTED DEPARTMENTS:** If the Curriculum Committee requests these letters, attach them to the back of your proposal.

**DATE SUBMITTED:** The Curriculum Committee meets on the fourth Tuesday of each month. **Proposals are due in the Office of the Executive Director of Academic Programs on or before the second Tuesday of the month.**

**REVISION SUBMISSION DATE:** If changes are required to the original proposal, enter the date the proposal was resubmitted.

**IMPLEMENTATION DATE REQUESTED:** Enter the first day of the semester (or summer term) and year in which the proposed curriculum change(s) would take effect.

**CURRICULUM PROPOSAL** (Submit one electronic copy to the Executive Director of Academic Programs by the second Tuesday of the month.)

| | |
|---|---|
| **Proposal Number:** | #20-21-01 |
| **School/Department/Program:** | **School of Nursing** |
| **Preparer/Contact Person:** | **Dr. Laura Clayton, Dr. Theresa Jones, or Professor Brianna Locante** |
| **Title of Degree Program** | ASN Program |
| **Telephone Extension:** | **304-367-4074** |
| **Date Originally Submitted:** | **10.2.20** |
| **Revision (Indicate date and label it Revision #1, #2, etc.):** | 10.31.20 Revision #1 |
| **Implementation Date Requested:** | **Summer Semester 2021** |

I. **PROPOSAL ABSTRACT**. Write a brief abstract, not exceeding 100 words, which describes the proposed changes.

Incorrectly calculating drug dosages is one of the most common medication errors caused by registered nurses. Some nursing students struggle with correctly calculating medication dosages while other students request additional course work to improve their confidence level in doing so. These courses are designed to enhance the nurses use of critical thinking skills in performing drug calculations, reading drug labels, and provides a foundation for safe medication administration across the lifespan.

- NURS 1125 (2 credits)
- NURS 1225 (1 credit)

II. **DESCRIPTION OF THE PROPOSAL**. Provide a response for each letter, A-G, and for each Roman Numeral II–V. If any section does not apply to your proposal, reply N/A.

A. Deletion of course(s) or credit(s) from program(s) Total hours deleted: ___0_____

B. Addition of course(s) or credit(s) from program(s) Total hours added: ____0_____

C. Provision for interchangeable use of course(s) with program(s) N/A

D. **Course Description Revision**: Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog. N/A

E. **Course Changes:** Identify changes to existing courses such as changes to title, course number, learning outcomes, and elective or required status. N/A
Not repeatable

F. **Create a New Course**(s) information (if applicable): For each new course complete the following:

1. **Course Catalog Information:**
NURS 1125: This course is limited to nursing students admitted to or currently enrolled in the ASN or BSN programs. It does not alter any required course credits within the nursing program or impact any other curriculum. This is an elective course.

| | |
|---|---|
| a. Course prefix (subject area) and number: | NURS 1125 |
| b. Course title: | Basic Drug Dosage Calculations for Nurses |
| c. Course term(s) (e.g., Fall, Summer only): | Summer, Fall, Spring, Winter |
| d. Credit hours/Variable credit: | 2 |
| e. Repeatability (number of repeat credit hours): | 0 |
| f. **Prerequisite/Corequisites/Restrictions/Cross-listings:** If none, simply indicate with N/A (Not Applicable): | No Cross Listings Admission to or enrollment in the nursing program. |
| g. ***Co-requisite*** (include subject prefix and course number): | N/A |
| h. ***Cross-listings*** (e.g., PSYC 2230 and SOCY 2230): | N/A |
| i. **Grade Type:** Indicate whether students will be assigned a standard A-F final grade or Credit/No Credit (CR/NCF) grade: | A-F final grade |
| **j. Required Course or Elective Course:** | Elective Course |
| **k. Course Fees** (Indicate amount): | No Nursing Fee |

2. **Course Catalog Information:**
NURS 1225: This course is limited to nursing students who have successfully completed NURS 1108, NURS 1115, and NURS 1120. It does not alter any required course credits within the nursing program or impact any other curriculum. This is an elective course. There is no net gain or loss of hours required to complete the program with the addition of NURS 1125 or NURS 1225 since these are elective courses.

| | |
|---|---|
| l. Course prefix (subject area) and number: | NURS 1225 |
| m. Course title: | Advanced Drug Dosage Calculations for Nurses |

| | |
|---|---|
| n. Course term(s) (e.g., Fall, Summer only): | Summer, Fall, Spring, Winter |
| o. Credit hours/Variable credit: | 1 |
| p. Repeatability (number of repeat credit hours): | 0 |
| q. **Prerequisite/Corequisites/Restrictions/Cross-listings:** If none, simply indicate with N/A (Not Applicable): | No Cross Listings Completion of NURS 1108, NURS 1115, and NURS 1120. |
| r. ***Co-requisite*** (include subject prefix and course number): | NURS 1108, NURS 1115, and NURS 1120. |
| s. ***Cross-listings*** (e.g., PSYC 2230 and SOCY 2230): | N/A |
| t. **Grade Type:** Indicate whether students will be assigned a standard A-F final grade or Credit/No Credit (CR/NCF) grade: | A-F final grade |
| **u. Required Course or Elective Course:** | Elective |
| **v. Course Fees** (Indicate amount): | No Nursing Fee |

2. **New Course Supplemental/Supporting Documentation**:

   a. **Course Catalog Description**:
      - **See Appendix A NURS 1125 Course Description**
      - **See Appendix D NURS 1225 Course Description**

   b. **Course Learning Outcomes (CLO's):**
      - **See Appendix C NURS 1125 Student Learning Outcomes**
      - **See Appendix F NURS 1225 Student Learning Outcomes**

   c. **Course Outline:** Attach a course outline consisting of at least two levels.
      - **See Appendix B NURS 1125 Course Outline**
      - **See Appendix E NURS 1225 Course Outline**

   d. **Assessments:** Describe generally how student's achievement of the course learning outcomes will be assessed

      - **See Appendix C NURS 1125 Assessments**
      - **See Appendix F NURS 1225 Assessments**

3. **Shared Course**: If this is a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for course being shared. N/A

G. Attach an itemized summary of the present program(s) affected, if any, and of the proposed change(s). N/A

Describe how this proposal affects the hours needed to complete this program. Specifically, what is the net gain or loss in hours? Use the format for Current and Proposed Programs in Appendix A.

## III. RATIONALE FOR THE PROPOSAL

A. **Quantitative Assessment**: Indicate the types of assessment data, i.e., surveys, interviews, capstone courses, projects, licensure exams, nationally-normed tests, locally developed measurements, accreditation reports, etc., that were collected and analyzed to determine that curricular changes were warranted. Quantitative data is preferred.

Many of the nursing students have difficulty performing correct dosage calculations. Faculty report that 25-30% of students miss 50% or more of drug calculations on unit and final exams. Faculty frequently tutor nursing students one-one-one to assist them with understanding drug calculations These courses would provide students with additional opportunities for education on drug dosage calculations and practice performing calculations, which would ultimately increase the students' knowledge and competency level. In clinical practice incorrect drug dosage calculations has the potential to and can result in negative patient outcomes, even resulting in patient death.

B. **Qualitative Assessment**: Based upon the assessment data above, indicate why a curricular change is justified. Indicate the expected results of the change. Be sure to include an estimate of the increased cost, or reduction in cost of implementation. FOR EXAMPLE: Will new faculty, facilities, equipment, or library materials be required?

The addition of these elective courses will strengthen the students' knowledge and competence in drug dosage calculations. They will further promote patient safety and overall health of the patient population. No faculty, additional facilities, equipment or library materials are needed.

## IV. APPROVAL

Should this proposal affect any course or program in another school, a memo must be sent to the Dean of each school impacted and a copy of the memo(s) must be included with this proposal. In addition, the Deans of the affected schools must sign below to indicate their notification of this proposal.

By signing here, you are indicating your college's/school's notification of this proposal.

| College/School | Dean | Signature |
|---|---|---|
| School of Nursing | Dr. Laura Clayton | Laura H Clayton 10/2/20 |
| | | Laura H Clayton 10/2/20 |
| | | |

V. Should this proposal affect any course to be added or deleted from the general studies requirements, a memo from the chair of the General Studies Committee indicating approval of the change must be included with this proposal. N/A

VI. ADDITIONAL COMMENTS.

## APPENDIX A

Course Description

NURS 1125: Basic Drug Dosage Calculations for Nurses

NURS 1125: Basic Drug Dosage Calculation for Nurses: (2 credit hours). The course focuses on foundational components of safe medication calculation with emphasis on critical thinking techniques to effectively, accurately and safely calculate basic dosages of medications across the lifespan. It includes reading, interpreting and solving basic drug calculation problems encountered in the preparation of medication.
Prerequisites: Admission to or enrollment in the nursing program.

## APPENDIX B

NURS 1125: Course Outline

**Part 1**: **Review of Mathematics**

- Fractions
- Decimals
- Percent
- Ratio and Proportion

**Part 2: Units and Measurements for Calculation of Drug Dosages**

- Metric and Household Measurements – pounds, kilograms, grams, milligrams, micrograms, teaspoons, ounces
- Calculations Used in Patient Populations
- Common abbreviations

**Part 3: Preparation for Calculation of Drug Dosages**

- Safety in Medication Administration
- Interpretation of the Licensed Prescriber's Orders
- Reading Medication Labels

**Part 4: Calculation of Drug Dosages**

- Oral Dosages – pills, capsules, liquids
- Parenteral Dosages – SQ, IM, ID
- Dosages Measured in Units
- Reconstitution of Medications
- Intravenous Flow Rates

## APPENDIX C

### NURS 1125: Student Learning Outcomes and Methods of Assessment

| Student Learning Outcomes | Methods of Assessment |
|---|---|
| a. At the end of this course, the student will be able to read and interpret medication labels. | 90% of students will obtain a "C" or higher on the following:<br>Assignments<br>Quizzes/Exams |
| b. At the end of the course, the student will be able to correctly interpret healthcare provider medication orders | 90% of students will obtain a "C" or higher on the following:<br>Assignments<br>Quizzes/Exams |
| c. At the end of this course the student will be able to accurately perform drug dosage calculations for patients across the lifespan. | 90% of students will obtain a "C" or higher on the following:<br>Assignments<br>Quizzes/Exams |
| d. At the end of this course, the student will be able to Identify correct safe dose range of medications for patients across the lifespan. | 90% of students will obtain a "C" or higher on the following:<br>Assignments<br>Quizzes/Exams |

Description of Assessment:

| | |
|---|---|
| Assignments | This could include worksheets or case study assignments that the student would complete and submit for a grade. |
| Quizzes/Exams | This could include drug calculation questions, reading and interpreting drug labels, etc. Students would need to obtain a minimum of 75% to pass the quizzes. |

**Examples of assignments or quizzes/exams could include:**

**Example 1: PO Medication Calculation**

Acetaminophen 500 mg tab po is ordered Q4H PRN. On hand: 250 mg/1 tablet. How many tablets would you administer in each dose?

**Example 2: Medication Label**

Joe buys a medication from the store. He is looking at the drug label trying to understand all the symptoms that could be relieved by all the different active ingredients contained in the medication. Under which section would he find this information most readily?

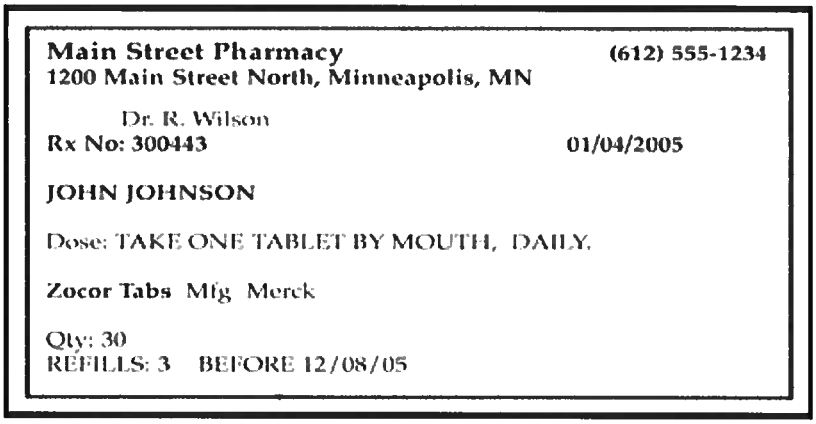
A. Active ingredients

B. Uses

C. Warnings

D. Directions

**Example 3: Who is this prescription for?**



Main Street Pharmacy (612) 555-1234
1200 Main Street North, Minneapolis, MN

Dr. R. Wilson
Rx No: 300443 01/04/2005

JOHN JOHNSON

Dose: TAKE ONE TABLET BY MOUTH, DAILY.

Zocor Tabs Mfg Merck

Qty: 30
REFILLS: 3 BEFORE 12/08/05

a. Ralph Wilson
b. Zocor Tablets
c. John Johnson
d. Main Street Pharmacy

**Example 4: Reconstitution Medications**

| | |
|---|---|
| **CARBENICILLIN**<br><br>**For IV Use only**<br><br>5 g<br><br>Caution: Federal law prohibits distributing without prescription. | Add 9.5mL of sterile water for a final concentration of 500mg/ mL<br><br>Stable for 48 hours in the refrigerator.<br><br>Read accompanying circular.<br><br>Expires Oct. 15, 2022 |

The physician's order reads: Carbenicillin G 750 mg IV q6h

How many mL are required for one dose?

**Example 5: Basic IV Calculation**

The IV fluid of 100 mL is to infuse over 8 hours. The tubing drop factor is 15 gtt/mL. How many mL/hour will the IV infuse. How many gtt/min will the IV infuse?

**Example 6: Injection Medication Calculation**

A patient is to receive an injection of gentamicin 60 mg. The ampoule contains 80 mg in 2mL. What volume of drug should be drawn up? Shade the correct amount in the syringe.

## APPENDIX D

Course Description

NURS 1225: Advanced Drug Dosage Calculations for Nurses

NURS 1225: Advanced Drug Dosage Calculation for Nurses: (1 credit hour). The course focuses on advanced components of safe medication calculation with emphasis on critical thinking techniques to effectively, accurately and safely calculate complex dosages of medications across the lifespan. It includes advanced IV calculations (such as anticoagulation, insulin, and weight based), pediatric dosages and obstetrical medications. Prerequisites: Successful completion of NURS 1108, NURS 1115, NURS 1120

## APPENDIX E

NURS 1225: Course Outline

**Part 1: Review of Mathematics**

- Review of Conversions (lbs, kg, mcg, mg, g, mL, L, units, mu, etc)
- Review of Intravenous Flow Rates

**Part 2: Calculation of Drug Dosages**

- Intravenous Flow Rates for Dosages Measured in Units (anticoagulants, insulin, etc.)
- Critical Care dosages
- Parenteral nutrition

**Part 3: Obstetric & Pediatric Drug Dosages**

- Pediatric dosages – including safe dose
- Obstetric dosages

## APPENDIX F

### NURS 1225: Student Learning Outcomes and Methods of Assessment

| Student Learning Outcomes | Methods of Assessment |
|---|---|
| a. At the end of this course, the student will be able to correctly calculate advanced drug dosages. | 90% of students will obtain a "C" or higher on the following:<br>Assignments<br>Quizzes/Exams |
| b. At the end of the course, the student will be able to correctly calculate safe dosages for the pediatric patient. | 90% of students will obtain a "C" or higher on the following:<br>Assignments<br>Quizzes/Exams |
| c. At the end of the course, the student will be able to correctly calculate safe dosages for the obstetric patient. | 90% of students will obtain a "C" or higher on the following:<br>Assignments<br>Quizzes/Exams |

Description of Assessment:

| | |
|---|---|
| Assignments | This could include worksheets or case study assignments that the student would complete and submit for a grade. |
| Quizzes/Exams | This could include drug calculation questions, reading and interpreting drug labels, etc. Students would need to obtain a minimum of 75% to pass the quizzes. |

**Examples of assignments or quizzes could include:**

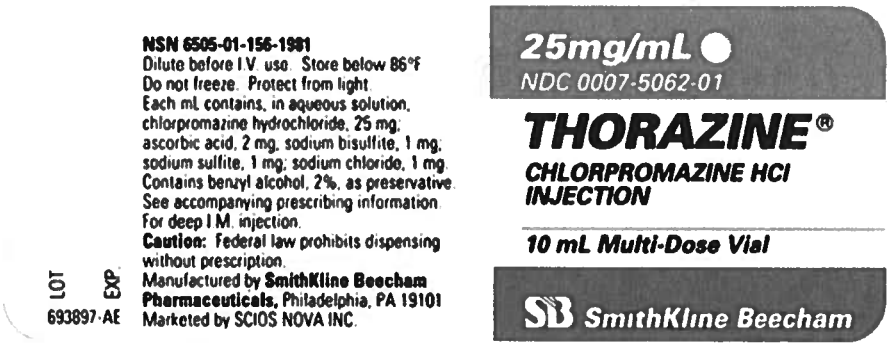
**Example 1: Example of Heparin infusion**

Ordered: 700 units per hour IV to infuse.
Available: 20,000 units per 500 mL.
How many mL per hour will provide 700 units per hour?

**Example 2: Nitroglycerin for chest pain**
Order: A patient is experiencing chest pain and has an order for nitroglycerin at 10 mcg/min. The concentration is nitroglycerin 100 mg in 500 mL of D5W. How many mL per hour should the IV pump be programed for?

**Example 3: Intravenous Flow Rates for Dosages Measured in Units**

Patient weighs 81.4 lb. The recommended daily dose is 0.50 mg / kg given Q6-8H. The medication label below is what is available. What is the total ml to be given for the recommended dose? Place the number only rounded to the nearest tenth, no units.




**Example 4: Critical Care Dosages**

The provider orders the patient an insulin infusion at 9 ml/hr. The concentration is 200 units in 250 ml of 0.9% NS. Calculate how many units per hour of insulin the patient is receiving.

**Example 5:** Nitroprusside sodium infusion is ordered at 0.3 mcg per kg per minute IV and is being infused on a patient with hypertension in a pharmacy prepared solution of 50 mg in 500 mL of D5W. The patient weighs 198 pounds. How many mL per hour will be administered?

**Example 6: Pediatric Safe Dose Calculation**

Doctor orders Amoxil for a child that weighs 63 lbs. The safe dosage range for this medication is 50 mg/kg/day every 8 hours. What is the safe dose for this child per dose?

**Example 7: Obstetric Drug Dosages**

A patient has an order for oxytocin 27 units in 1,000 mL of $D_5W$ to begin at 1 milliunit/min and then increase by 2 milliunits/min every 15 minutes until regular contractions occur. Maximum dose is 30 mU/min. Calculate the flow rate in milliliters per hour for the maximum infusion.