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| For Academic Affairs and Research Use Only | |
| Proposal Number | NHP54 |
| CIP Code: |  |
| Degree Code: |  |

**NEW OR MODIFIED COURSE PROPOSAL FORM**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

|  |
| --- |
| **[X]New Course, [ ]Experimental Course (1-time offering), or [ ]Modified Course (Check one box)** |

Signed paper copies of proposals submitted for consideration are no longer required. Please type approved name and enter date of approval.

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| --- | --- |
| Deanna Barymon  **Department Curriculum Committee Chair 9/2/21** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| Cheryl DuBose 9/2/21 **Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Head of Unit (if applicable)** |
| Shanon Brantley 9/13/2021  **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| **Office of Assessment (new courses only)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
| \_\_\_\_\_Scott E. Gordon\_\_\_\_\_\_9/23/2021  **College Dean** | Alan Utter\_\_\_\_\_\_\_\_\_\_\_ 10/11/2021  **Vice Chancellor for Academic Affairs** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **General Education Committee Chair (if applicable)** |  |

1. **Contact Person (Name, Email Address, Phone Number)**

Jody Nutt, jnutt@astate.edu, 870-680-8592

1. **Proposed starting term and Bulletin year for new course or modification to take effect**

Fall 2022

**Instructions:**

*Please complete all sections unless otherwise noted. For course modifications, sections with a “Modification requested?” prompt need not be completed if the answer is “No.”*

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|  | **Current (Course Modifications Only)** | **Proposed (New or Modified)**  *(Indicate “N/A” if no modification)* |
| **Prefix** |  | **RS** |
| **Number\*** |  | **3103** |
| **Title** |  | **3D Printing Design in Medicine**  (Short title: 3D PRINT DESIGN MEDICINE) |
| **Description\*\*** |  | **The hands-on use of 3D design software to create a 3D design. Students will independently design and construct a 3D structure and fabricate a 3D printed object. Prerequisite, RS 3102. Fall, Spring.** |

***\**** (Confirm with the Registrar’s Office that number chosen has not been used before and is available for use. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*. )

\*\*Forty words or fewer as it should appear in the Bulletin.

1. **Proposed prerequisites and major restrictions** **[Modification requested? No]**

(Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

1. Yes Are there any prerequisites?
   1. If yes, which ones?

RS 3102 Introduction to 3D Printing in Medicine

Students must be enrolled in a healthcare related program

* 1. Why or why not?

Core information from RS 3102 Introduction to 3D Printing in Medicine is necessary to carry out the function of 3D design and fabrication in RS 3103 3D Printing Design in Medicine.

Course pertains to healthcare related fields.

1. No Is this course restricted to a specific major?
   1. If yes, which major?
2. **Proposed course frequency [Modification requested? No]**

(e.g. Fall, Spring, Summer; if irregularly offered, please indicate, “irregular.”) *Not applicable to Graduate courses.*

Fall, Spring

1. **Proposed course type [Modification requested? No]**

Will this course be lecture only, lab only, lecture and lab, activity (e.g., physical education), dissertation/thesis, capstone, independent study, internship/practicum, seminar, special topics, or studio? Please choose one.

Lecture and Lab

1. **Proposed grade type [Modification requested? No]**

What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard Letter

1. NO Is this course dual-listed (undergraduate/graduate)?
2. NO Is this course cross-listed?

*(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross-listed course.)*

**a.** – If yes, please list the prefix and course number of the cross-listed course.

Enter text...

**b.** – **Yes / No** Can the cross-listed course be used to satisfy the prerequisite or degree requirements this course satisfies?

Enter text...

1. YES Is this course in support of a new program?

a. If yes, what program?

Certificate in 3D Printing in Medicine

1. NO Will this course be a one-to-one equivalent to a deleted course or previous version of this course (please check with the Registrar if unsure)?

a. If yes, which course?

Enter text...

**Course Details**

1. **Proposed outline** **[Modification requested? No]**

(The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

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| **Week** | **Content** |
| 1 | Overview of 3D Printing |
| 2 | Design software/program overview |
| 3 | Object movement and manipulation |
| 4 | Object adaptation |
| 5 | Start basic building structure |
| 6 | Continue basic structure |
| 7 | Submit basic structure |
| 8 | Original 3D design proposal |
| 9 | Construction: Original 3D design |
| 10 | Construction: Original 3D design |
| 11 | Construction: Original 3D design |
| 12 | Construction: Original 3D design |
| 13 | Construction: Original 3D design |
| 14 | Submission: Original 3D design |
| 15 | Set-up 3D printer/Print Original 3D Design |
| 16 | Final Examinations |

1. **Proposed special features** **[Modification requested? No]**

(e.g. labs, exhibits, site visitations, etc.)

Labs

1. **Department staffing and classroom/lab resources**

One instructor, one classroom and lab

1. Will this require additional faculty, supplies, etc.?

NO

1. Does this course require course fees?

No

*If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.*

**Justification**

**Modification Justification (Course Modifications Only)**

1. Justification for Modification(s)

N/A

**New Course Justification (New Courses Only)**

1. Justification for course. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Course Goals:

This course provides foundational content to enable students to meet these goals and outcomes. Upon completion of this course, the student will be able to:

1. Use software to design a 3D anatomical structure

2. Independently create a 3D design an anatomical model

3. Independently produce and print a 3D anatomical structure.

b. How does the course fit with the mission of the department? If the course is mandated by an accrediting or certifying agency, include the directive.

This certificate program will educate students in designing and printing a 3D human anatomy model that relates to medical imaging and radiation sciences for educational purposes. This aligns with the Medical Imaging and Radiation Sciences department mission of providing a comprehensive, multi-skilled education. We will be preparing students to design and fabricate anatomical 3D structures as related to the study of healthcare.

c. Student population served.

Undergraduate students interested in 3D human anatomical printing in healthcare.

d. Rationale for the level of the course (lower, upper, or graduate).

This is a lower level course. Students should be enrolled in a healthcare program. Students should be accepted in good standing for the A-State – Jonesboro campus.

**Assessment**

**Assessment Plan Modifications (Course Modifications Only)**

1. No Do the proposed modifications result in a change to the assessment plan?

*If yes, please complete the Assessment section of the proposal*

**Relationship with Current Program-Level Assessment Process (Course modifications skip this section unless the answer to #18 is “Yes”)**

1. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

Students will be able to meet the following program goals by completing this course.

1. Students will design a basic 3D structure.

2. Students will independently design, fabricate and print a 3D structure.

This course will serve a certification program proposal.

1. Considering the indicated program-level learning outcome/s (from question #19), please fill out the following table to show how and where this course fits into the program’s continuous improvement assessment process.

*For further assistance, please see the ‘Expanded Instructions’ document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.*

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| **Program-Level Outcome 1 (from question #19)** | Students will design a basic 3D structure. |
| Assessment Measure | 75% or higher course grade; lab rubric |
| Assessment  Timetable | Fall or Spring Semester, weekly throughout the semester. |
| Who is responsible for assessing and reporting on the results? | Program faculty |

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| **Program-Level Outcome 2 (from question #19)** | Students will independently design, fabricate and print a 3D structure. |
| Assessment Measure | 75% or higher course grade; lab rubric |
| Assessment  Timetable | Fall or Spring Semester, weekly throughout the semester. |
| Who is responsible for assessing and reporting on the results? | Program faculty |

*(Repeat if this new course will support additional program-level outcomes)*

**Course-Level Outcomes**

1. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

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| **Outcome 1** | Identify the 3D printing process. |
| Which learning activities are responsible for this outcome? | Homework, Quizzes, Exams, Lab |
| Assessment Measure | Submit assignments on time, maintain 75% or higher course grade |

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| **Outcome 2** | Demonstrate the ability to move, manipulate and adapt an object for 3D design. |
| Which learning activities are responsible for this outcome? | Homework, Quizzes, Exams, Lab |
| Assessment Measure | Submit assignments on time, maintain 75% or higher course grade |

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| **Outcome 3** | Demonstrate the ability to prepare a 3D printer to print a structure |
| Which learning activities are responsible for this outcome? | Homework, Quizzes, Exams, Lab |
| Assessment Measure | Submit assignments on time, maintain 75% or higher course grade |

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| **Outcome 4** | Demonstrate the ability to design, fabricate and print a 3D structure. |
| Which learning activities are responsible for this outcome? | Homework, Quizzes, Exams, Lab |
| Assessment Measure | Submit assignments on time, maintain 75% or higher course grade |

*(Repeat if needed for additional outcomes)*

**Bulletin Changes**

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| **Instructions** |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Please include a before (with changed areas highlighted) and after of all affected sections.**  **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.** |

**[AFTER]**

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**Certificate in 3D Printing in Medicine:**

This program will introduce health care students to the terminology, fundamentals and application of 3D Printing. This is a formal education program to educate students to the concept, fabrication and printing of a 3D structure.

RS 3102 Introduction to 3D Printing in Medicine 2

**RS 3103 3D Printing Design in Medicine 3**

RAD 3223 Section Anatomy 3

RS 3142 Advanced Imaging and Therapy I 2

RS 3152 Advanced Imaging and Therapy II 2

RS 436V Independent Study in Radiologic Sciences 3

**Total Required Hours: 15**

**BEFORE**

**Page 595**

Radiologic Sciences (RS)

RS 3122. Legal and Regulatory Environment of Radiology Introduction to the growing legal and regulatory requirements being placed on radiology departments and professionals. Content includes American College of Radiology. Joint Commission on Accreditation of Healthcare Organizations, Food and Drug Administration, and state regulatory regulations as well as other legal considerations regarding personnel, operations and staffing. Prerequisite, formal acceptance into the professional program. Fall, Summer.

RS 3142. Advanced Imaging and Therapy I Foundation information on the physics, instrumentation, and clinical procedures for digital imaging, computed tomography, magnetic resonance imaging, diagnostic medical sonography equipment as well as an overview of quality management concepts. Fall.

RS 3152. Advanced Imaging and Therapy II Foundation information on the physics, instrumentation, and clinical procedures for cardiovascular interventional technology, mammography, bone densitometry, nuclear medicine, and radiation therapy. Spring.

RS 3633. Pediatric Considerations in Radiology Practice standards utilized in pediatric radiology including accepted methods of immobilization, patient care and techniques. Prerequisite, formal acceptance into the professional program. Summer.

RS 3733. Geriatric Considerations in Radiology Psychosocial, emotional, mental and psychiatric issues encountered in the aging process with attention to normal processes of aging, common interventions, and treatments. Spring, Summer.

RS 3843. Advance Clinical Practice Focus is on current healthcare delivery environment including patient assessment, monitoring, infection control, and management. It includes working with multicultural patients, managing problem patients, and patient education. Prerequisite, Admission to the Imaging Specialist program. Spring.

**AFTER**

**Page 595**.

Radiologic Sciences (RS)

RS 3102 Introduction to 3D Printing in Medicine. An introduction to the principles of 3D printing, applications across the healthcare industry, the components of a 3D printer and common materials used for different applications. Prerequisite, Enrollment in a health care related program. Fall, Spring.

**RS 3103 3D Printing Design in Medicine. The hands-on use of 3D design software to create a 3D design. Independently design and construct a 3D structure, and fabricate a 3D printed object. Prerequisite, RS 3102, Enrollment in a health care related program. Fall, Spring.**

RS 3122. Legal and Regulatory Environment of Radiology Introduction to the growing legal and regulatory requirements being placed on radiology departments and professionals. Content includes American College of Radiology. Joint Commission on Accreditation of Healthcare Organizations, Food and Drug Administration, and state regulatory regulations as well as other legal considerations regarding personnel, operations and staffing. Prerequisite, formal acceptance into the professional program. Fall, Summer.

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