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| For Academic Affairs and Research Use Only |
| Proposal Number | NHP55 |
| 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 approve name and enter date of approval.

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| Deanna Barymon 9/2/21**Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 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** |
|  Mary Elizabeth Spence 10/01/2021**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\*** |  | **3102** |
| **Title** |  | **Introduction to 3D Printing in Medicine**(Short title: INTRO 3D PRINT MEDICINE) |
| **Description\*\*** |  | **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. 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?

Students must be enrolled into a health care related program.

* 1. Why or why not?

 Course pertains to the healthcare profession

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

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 | History of 3D Printing |
| 2 | The Basic Language of 3D Printing |
| 3 | 3D Print Methods and Materials |
| 4 | Applications of 3D Printing in Society |
| 5 | Applications of 3D Printing- Medical |
| 6 | 3D Scanning |
| 7 | Terminology |
| 8 | 3D Printer Components |
| 9 | 3D Printing Software, Part 1 |
| 10 | 3D Printing Software, Part 2 |
| 11 | 3D Product Design Overview |
| 12 | Basic Movement and Object Manipulation |
| 13 | Editing and Creating Objects |
| 14 | Basic 3D structure design |
| 15 | Creating a basic 3D structure |
| 16 | Final Examinations |

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

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

No

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

One instructor, one classroom and lab

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

 No

1. No Does this course require course fees?

 *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)

Enter text...

**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. Discuss the history and current applications of 3D printing

2. Identify the major materials used in 3D printing

3. Discuss the major components of a 3D printer

4. Discuss 3D printing terminology.

5. Describe the elements of 3D structure design.

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

 This certificate program will educate students in the introduction to 3D printing, which is a technology used in many applications in the health care sector. This aligns with the Medical Imaging and Radiation Sciences department mission of providing a comprehensive, multi-skilled education. This course will prepare students for advances in healthcare technology.

c. Student population served.

Undergraduate students interested in 3D printing in healthcare.

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

This is an introduction 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 be competent in the basic process of 3D printing.

2. Students will develop critical thinking skills to begin basic 3D design.

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 be competent in the basic process of 3D printing. |
| Assessment Measure | 75% or higher course grade.  |
| Assessment Timetable | Fall 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 develop critical thinking skills to begin basic 3D design. |
| Assessment Measure | 75% or higher course grade. |
| 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 materials and components used in 3D printing |
| Which learning activities are responsible for this outcome? | Homework, quizzes, exams |
| Assessment Measure  | Submit assignments on time, maintain 75% or higher course grade |
| **Outcome 2** | Describe terminology used in 3D design and printing |
| Which learning activities are responsible for this outcome? | Homework, quizzes, exams |
| Assessment Measure  | Submit assignments on time, maintain 75% or higher course grade |

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| **Outcome 3** | Discuss applications of 3D printing in industry and health care. |
| Which learning activities are responsible for this outcome? | Homework, quizzes, exams |
| Assessment Measure  | Submit assignments on time, maintain 75% or higher course grade |

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| **Outcome 4** | Discuss the basic components of a 3D printer. |
| Which learning activities are responsible for this outcome? | Homework, quizzes, exams |
| Assessment Measure  | Submit assignments on time, maintain 75% or higher course grade |

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| **Outcome 5** | Identify methods to adjust an object for 3D printing. |
| Which learning activities are responsible for this outcome? | Homework, quizzes, exams |
| 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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**There is not a before- this is a new program.**

**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 Sectional 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**

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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 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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