# Harpur/Systems Science MS 4+1 Program Proposal

Designed exclusively for Binghamton University students in the Harpur College of Arts and Sciences, the Harpur*/Systems Science MS 4+1 program is compatible with any Harpur College undergraduate major. This program allows students to take the first year of Systems Science MS program coursework in their senior year with at least some of those credit hours double counting towards fulfilling their Harpur upper-level electives. Students in this program earn an undergraduate degree and a Systems Science MS degree from Binghamton University in only five years, saving one year of graduate tuition. To successfully complete this 4+1 program, students should have gained basic knowledge about college-level mathematics, typically by completing MATH 223, 224 and 225.

*The Systems Science MS 4+1 is not available to the following Harpur Undergraduate Programs:

- ART BA
- Theatre BA
- Music MusB
- Geology BA
- Geology BS

## Admissions

The Harpur/Systems Science MS 4+1 program requires a two-step admissions process: admission to the Harpur/Systems Science MS 4+1 program when a student has second semester junior standing, and admission to the Graduate School when the student has second semester senior standing.

## Admission to 4+1 Program

To be eligible to apply to the Systems Science MS 4+1 program, students must have enough room in their senior year schedule to complete their undergraduate degree AND make sufficient progress toward their Systems Science MS degree. Prior to applying, the Systems Science MS graduate program director as well as the student's Harpur and major advisor(s) must have approved their degree plan.

When applying, students must submit the following materials to the Systems Science MS graduate program director in the Department of Systems Science and Industrial Engineering at Watson College:

- Personal statement describing why the student is interested in enrolling in the 4+1 program
- Current resume
- Two letters of recommendation

In addition, students must complete the 4+1 Intent Application, located on your my.binghamton.edu portal.

Note: The Systems Science MS 4+1 is not available to the following Harpur Undergraduate Programs:

- ART BA
- Theatre BA
- Music MusB
- Geology BA
- Geology BS

**Admission to the Graduate School**

Students apply to the Graduate School through the graduate program application process (https://gograd.binghamton.edu) when they have **second semester senior standing.** In order to be accepted into the Graduate School as a graduate student in the Systems Science MS program, a student must have made sufficient progress toward their Systems Science MS degree in their senior year. This means they will have successfully completed SSIE 500, SSIE 501 and SSIE 523 or another SSIE elective course, as well as successfully completing 9 graduate credits towards their Systems Science MS degree.

**Course Curriculum: Harpur/Systems Science MS 4+1 program**

**Harpur College Undergraduate Academic Requirements**

Students can begin preparing for the Harpur/Systems Science MS 4+1 program as early as their freshman year by planning to take their required undergraduate MATH coursework as soon as possible. All Harpur College students must complete all components of their bachelor's degree by the end of their fourth year, which includes 94 liberal arts and sciences credits, 126 total credits, general education requirements, Harpur College requirements (writing, upper-level, and residency) and major requirements.

To be eligible for this Harpur/Systems Science MS 4+1 Program, by the second semester of their junior year, students must be able to create a degree plan that shows they will complete the following coursework by the end of their senior year:

- General Education requirements
- Major requirements
- Harpur College requirements (upper-level, writing and residency requirements)
- 126 total credits
- 94 liberal arts and sciences credits

It is important to note for planning that at least some of the courses taken towards the Harpur/Systems Science MS 4+1 program in a student's senior year can double count

towards the Harpur upper-level requirement and the 126 total credits required for graduation.

**4th Year (Senior/Transition Year)**

Students take the first year of the Systems Science MS program coursework, including SSIE 500, SSIE 501 and SSIE 523 or another SSIE elective course.  During their senior year, they also must successfully complete 9 graduate credits towards their Systems Science MS degree.

**5th Year (Graduate Status)**

Students finish their Systems Science MS program coursework.  At a minimum they must successfully complete 18 graduate coursework credits in order to satisfy the Graduate School's residency requirement.

| Instructions: | If your 4+1 proposal is for a professional school undergraduate degree with a graduate program, please use the Sample Schedule tab.  If your proposal is for a 4+1 program with a Harpur College undergraduate major, please use the Harpur UG Sample Schedule tab for your 4+1 sample schedule. |
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For the Harpur UG Sample Schedule, please review:

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|---|---|---|
| | 1 | In terms 1 to 8, confirm there are at least 46 upper-level total credits |
| | 2 | In terms 1 to 8, confirm there are 126 credits |
| | 3 | Change only the major and graduate courses highlighted. All else should remain as it is currently. |
| | 4 | GenEd electives can be moved to other semesters but do not change the GenEd tags |
| | 5 | If a course in your major fulfills a GenEd requirement, please include that in the GenEd column |
| | 6 | If a Harpur College UG major requires more than 15 courses, please contact Cody Kreps or Kathy Brunt in the Harpur College Dean's Office for assistance in completing the chart. |

# Combined Program Sample Schedule

| Program/Track Title and Award | Harpur - Systems Science MS Blanket 4+1 |
|---|---|

Use the table to show how a typical student may progress through the program. Check all columns that apply to a course and enter credits where applicable. Dbl Count: X if a Graduate course taken as an Undergraduate which counts toward both degrees. Gen Ed: Fill in a Gen Ed requirement fulfilled, if applicable. Co/Prerequisite(s): list prerequisite(s) for the noted courses.

### Term 1 UG / Term 2 UG

| Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites |
|---|---|---|---|---|---|---|---|---|---|
| Harpur Major course 1 | 4 | | | | Harpur Major course 2 | 4 | | | |
| Gen Ed elective | 4 | | WL1 | | Gen Ed elective | 4 | | WL2 | |
| Gen Ed elective | 4 | | L | | Gen Ed elective | 4 | | G&C | |
| Gen Ed elective | 4 | | M | | Gen Ed elective | 4 | | H&W | |
| | | | | | MATH 223 Intro to Calculus | 2 | | | |
| Term credit total: | 16.0 | 0.00 | | | Term credit total: | 18.0 | 0 | | |

### Term 3 UG / Term 4 UG

| Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites |
|---|---|---|---|---|---|---|---|---|---|
| Harpur Major course 3 | 4 | | | | Harpur Major course 4 | 4 | | | |
| Gen Ed elective | 4 | | D/USD | | Gen Ed elective | 4 | | A | |
| Gen Ed elective | 4 | | C&N | | Gen Ed Activity/Wellness | 2 | | Y/S or B | |
| MATH 224 Differential Calculus | 2 | | | | Gen Ed elective | 4 | | JJ&T | |
| MATH 225 Integral Calculus | 2 | | | | Gen Ed elective | 4 | | WL3 | |
| Term credit total: | 16.0 | 0.0 | | | Term credit total: | 18.0 | 0.0 | | |

### Term 5 UG / Term 6 UG

| Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites |
|---|---|---|---|---|---|---|---|---|---|
| Upper - level Harpur Major course 5 | 4 | | | | Upper - level Harpur Major course 7 | 4 | | | |
| Upper - level Harpur Major course 6 | 4 | | | | Upper - level Harpur Major course 8 | 4 | | | |
| Elective or additional major course | 4 | | | | Elective or additional major course | 4 | | | |
| Elective or additional major course | 4 | | | | Elective or additional major course | 4 | | | |
| Term credit total: | 16.0 | 0.0 | | | Term credit total: | 16.0 | 0.0 | | |

### Term 7 UG / Term 8 UG

| Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites |
|---|---|---|---|---|---|---|---|---|---|
| Upper- level Harpur Major course 9 | 4 | | | | Upper- level Harpur Major course 11 | 4 | | | |
| Upper- level Harpur Major course 10 | 4 | | | | Upper- level Harpur Major course 12 | 4 | | | |
| SSIE 500 Computational Tools | 3 | X | | | Elective or additional major course | 1 | | | |
| SSIE 501 Intro to Systems Science | 3 | X | | | SSIE 523 Collective Dynamics | 3 | X | | |
| Term credit total: | 14.0 | 6.0 | | | Term credit total: | 12.0 | 3.0 | | |

### Term 1 GD / Term 2 GD

| Course Number & Title | Credits | Dbl Count (X) | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Co/Prerequisites |
|---|---|---|---|---|---|---|---|
| SSIE 505 Applied Prob. Stats. | 3 | | | SSIE elective | 3 | | |
| SSIE elective | 3 | | | SSIE elective (600-level) | 3 | | |
| SSIE elective | 3 | | | SSIE elective or termination project | 3 | | |
| SSIE elective | 3 | | | | | | |
| Term credit total: | 12.0 | 0.0 | | Term credit total: | 9.0 | 0.0 | |

### Term 3 GD / Term 4 GD

| Course Number & Title | Credits | Dbl Count (X) | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Co/Prerequisites |
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| Term credit total: | 0.0 | 0.0 | | Term credit total: | 0.0 | 0.0 | |

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| Undergraduate Total: | 126.0 | (All courses taken as UG or taken as a Grad and double counted) |
| Graduate Total: | 30.0 | (All courses taken as a Grad or taken as an Undergrad and double counted) |
| Double Counted Credits: | 9.0 | (All double counted courses) |
| Total Credits (UG + GD - Dbl Ct): | 147.0 | (Total credits taken in program, regardless of source.) |

Identify the required comprehensive, culminating element(s), such as a thesis or examination, including course number(s), if applicable:

# Combined Program Sample Schedule

**Program/Track Title and Award**

Use the table to show how a typical student may progress through the program. Check all columns that apply to a course and enter credits where applicable. Dbl Count: X if a Graduate course taken as an Undergraduate which counts toward both degrees. Gen Ed: Fill in a Gen Ed requirement fulfilled, if applicable. Co/Prerequisite(s): list prerequisite(s) for the noted courses.

| Term 1 UG: | | | | | Term 2 UG: | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites |
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| Term credit total: | 0.0 | 0.00 | | | Term credit total: | 0.0 | 0 | | |

| Term 3 UG: | | | | | Term 4 UG: | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites |
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| Term credit total: | 0.0 | 0.0 | | | Term credit total: | 0.0 | 0.0 | | |

| Term 5 UG: | | | | | Term 6 UG: | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites |
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| Term credit total: | 0.0 | 0.0 | | | Term credit total: | 0.0 | 0.0 | | |

| Term 7 UG: | | | | | Term 8 UG: | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Gen Ed | Co/Prerequisites |
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| Term credit total: | 0.0 | 0.0 | | | Term credit total: | 0.0 | 0.0 | | |

| Term 1 GD: | | | | Term 2 GD: | | | |
|---|---|---|---|---|---|---|---|
| Course Number & Title | Credits | Dbl Count (X) | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Co/Prerequisites |
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| Term credit total: | 0.0 | 0.0 | | Term credit total: | 0.0 | 0.0 | |

| Term 3 GD: | | | | Term 4 GD: | | | |
|---|---|---|---|---|---|---|---|
| Course Number & Title | Credits | Dbl Count (X) | Co/Prerequisites | Course Number & Title | Credits | Dbl Count (X) | Co/Prerequisites |
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| Term credit total: | 0.0 | 0.0 | | Term credit total: | 0.0 | 0.0 | |

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|---|---|---|
| **Undergraduate Total:** | 0.0 | *(All courses taken as UG or taken as a Grad and double counted)* |
| **Graduate Total:** | 0.0 | *(All courses taken as a Grad or taken as an Undergrad and double counted)* |
| **Double Counted Credits:** | 0.0 | *(All double counted courses)* |
| **Total Credits (UG + GD - Dbl Ct):** | 0.0 | *(Total credits taken in program, regardless of source.)* |

**Identify the required comprehensive, culminating element(s), such as a thesis or examination, including course number(s), if applicable:**

# THE GRADUATE SCHOOL

Combined Undergraduate/Graduate Degree Program Proposal Form

Name of proposed program:  Harpur BA/BS/BFA - Systems Science MS

List all the existing registered undergraduate and graduate programs that will be part of the proposed combined program, as well as the associated SED codes and program tracks. Add additional pages, if needed.

| Program | Program title | Award (BA, BS, MS) | Credit hours | SED program code | Major code |
|---|---|---|---|---|---|
| Program 1 (UG) | Harpur (excludes: ARTS BA, THEA BA, MusB, GEOL BA, GEOL BS) | BA, BS, BFA | 126 | NA | NA |
| Program 2 (GD) | Systems Science | MS | 30 | 13740 | R03 |
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List all graduate courses, and note whether they are double-counted as undergraduate courses. For each graduate course that is double-counted, note what undergraduate requirement it fulfills. If a graduate course replaces a specific undergraduate course, note that course. If a graduate course counts as an elective or upper-level elective for the major, note that. An individual program schedule should be created for each undergraduate track included in the proposed combined program. Add additional rows/pages as needed.

| Graduate course | Double counted (Y/N) | Undergraduate requirement fulfilled (Required major course elective) | Credit hours | Graduate requirement fulfilled (Required, elective) |
|---|---|---|---|---|
| SSIE 500 | Yes | | 3 | Required |
| SSIE 501 | Yes | | 3 | Required |
| SSIE 505 | No | | 3 | Required |
| SSIE 520 or 523 | Yes | | 3 | Required |
| SSIE Elective | No | | 3 | SSIE Elective |
| SSIE Elective | No | | 3 | SSIE Elective |
| SSIE Elective | No | | 3 | SSIE Elective |
| SSIE Elective | No | | 3 | SSIE Elective |
| 600-level SSIE Elc | No | | 3 | SSIE Elective |
| SSIE Elc or Project | No | | 3 | SSIE Elective |
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# THE GRADUATE SCHOOL
Combined Undergraduate/Graduate Degree Program Proposal Form

BINGHAMTON UNIVERSITY
THE GRADUATE SCHOOL
PO Box 6000 Binghamton, New York, 13902-6000
607-777-2077, Fax: 607-777-2501
gradschool.binghamton.edu

**Total number of credits used for the undergraduate degree:**   126 credits

**Total number of double-counted credits**:     Maximum of 9 credits

**Total number of remaining graduate credits used for the graduate degree** :*   Minimum of 21 credits

*Note: All combined undergraduate/graduate programs must have 126 undergraduate credits and at least 18 graduate credits that students will take as a graduate student. Please keep in mind that graduate residency is defined as courses for which the student receives a letter grade. Based on this requirement, the following courses do not count towards the graduate school residency requirement: College Teaching of the Discipline (591), Thesis (599), Predissertation (698), Dissertation (699), Continuous registration (700 level) and all other courses taken for an S/U grade.

To show feasibility of the proposed program, please fill out a sample schedule of all requirements needed to complete the program and submit the sample schedule with this form. Please fill out a separate schedule for each track, if applicable, to demonstrate all tracks are feasible.

Undergraduate program contact:   Carl Lipo

Graduate program contact:   Hiroki Sayama

If multiple programs are involved, a Dean's office may be the appropriate contact.

Approvals

Undergraduate advising office signature: _____   Date: _____

Vice Provost for Undergraduate Education signature : _____   Date: _____

Campus governance approval date: _____

OIRA major code: _____

Please submit completed proposal to the Dean of the Graduate School