

Reasons for Shifting from a Three-Credit Curriculum to a Four-Credit Curriculum

Statement of Problem

The problem we seek to address is reducing the relatively high rate of attrition of URI undergraduates and the relatively low rate of graduation. Our premise is that offering courses in a four credit format rather than the existing three credit format will facilitate retention and reduced time to graduation.

The University of Rhode Island (URI) offers three-credits for most courses, with the exception of various physical science courses, computer science courses and math courses (see Appendix 1, which lists approximately 180 courses offered for 4 credits, most at the 300 and 400 levels). Full-time students are assumed to enroll for 15 credits, i.e., five classes at three credits each. An analysis of student credit load at URI, however, shows that nearly one-half of all students carry fewer than 15 credits. While almost all students at URI register for five classes in the beginning of the semester, they typically drop at least one class by the end of the drop deadline (See Table 1).

Why our students act in this way is not always clear. Interviews with many academic administrators around the country reveal that this pattern is not unusual, and most express a belief that five classes are simply too many for many students to “wrap their minds around.” In fact, interviews with students reveal that many plan this strategy intentionally, and often try to take “four serious classes and one easy class,” or plan to drop one course if they find the load too much. At URI, the impact on our graduation rate is obvious. Even with summer classes included

in their plan, most students cannot graduate in four years if their actual course load is four courses per semester.

Four credit benefits

Moving from three credits to a four credit per courses format creates both problems and solutions. The transition from standard three credit courses to four credit courses requires a re-thinking of the class syllabi and a re-thinking of class time usage. While many schools have made the change from three to four, there is no consensus as to how to manage this change. Some schools increase the actual seat time or teacher-student contact (University of Oregon, University of Main at Farmington, Keen State College). Other schools such as University of New Hampshire increased the amount of work required of students outside of class. Another model is to add an experiential or active learning component to the course, a strategy piloted by Elon University and Keene State College, whereby each department is encouraged to creatively incorporate an engaging learning component into their class. For example, at Elon University the history department uses the extra credit to help students learn to use primary source materials in their research.

Moving to a four-credit system would allow URI to add such an experiential learning component to each course. This is consistent with our mission statement in which URI is described as a place that takes “responsibility for expanding knowledge, for transmitting it, and for fostering its application.” We describe “opportunities for learning outside the classroom and for community service,” and we say that students “are expected to be active participants both in and beyond the classroom.” In the 1998 Academic Plan Assumptions, we state that our learner-centered education is proposed to be the “driving pedagogical force in the development of curricula” (URI

website). This learner-centered pedagogy refers to a shift from lectures to a focus on “collaborative and cooperative learning, learning communities, service-learning, and experiential learning.” It also implies shifts in curricula to include a variety of delivery systems and time patterns for course and program offerings, and developing flexible instructional modules and certificate programs to meet emerging student needs.” (URI website)

Data from the NSSE study in 2005 found that URI students spend a good deal of time actively engaged (presentation, projects, community based projects) in class at a level comparable to students in our peer institutions. On the other hand, they spend less time talking about these concepts outside of class. Their satisfaction with practicum/field experiences are reported to be about the same as students from comparable schools and the interactions URI students have with faculty is reported to be about the same as students from comparable schools. Students at URI, however, are assigned fewer books and write fewer papers than other students at doctoral-extensive schools. Adding an extra credit hour would enable faculty to increase and improve all venues for more experiential learning and increase in the amount of reading and writing they expect of students. It would make possible the goal of increasing faculty time with students through various experiential activities, both in and out of the classroom.

The Standard for four-credit courses

While this was not an exhaustive search, and unfortunately no organization keeps tabs on credits offered at various institutions, we did find that many top schools around the country offer a four-credit system. Centenary College in New Jersey reported, “90% of the top 50 liberal arts colleges use a four credit system” (Greenhalgh, Eastern University). A number of Ivy League schools (Yale, Harvard, Brown) use the four-credit system as well as our peer school, University of New

Hampshire. All public schools in Oregon have or are in the process of moving to a four-credit system. As well, a number of state schools have shifted to a four-credit system (SUNY Binghamton, Keene State College, University of Maine at Farmington). There are also a number of schools which are currently considering the idea of shifting to this new four-credit system.

There are already many four-credit courses at URI (see Appendix 1 for 180 separate course titles) and within certain programs it is standard practice. It is interesting that within the College of the Environment and Life Sciences, many students participate in experiential focused learning programs, participating in both internships outside the University and apprenticeships/practicum within the University. Many of these courses are offered for four credits. One could argue that there is a natural relationship between experientially based programs and a four-credit course format.

Motivation to Change Credit Systems

We called the academic officers in many of the institutions where we had learned used four-credits to better understand the impetus for making this change. Their responses typically included one or more the following imperatives: more effective pedagogy, improved faculty workload, and better scheduling. In terms of pedagogy, several schools stated they did so to “raise academic standards” (University of Maine at Farmington, University of New Hampshire), in concert with a belief that students were overloaded by managing five classes (UNH, Keene State College, St. Joseph’s College of Maine). By increasing the number of credits and decreasing the number of classes required, students are able to focus on fewer class subjects and achieve a greater depth of understanding, thereby meeting a higher level of academic excellence.

Other institutions mentioned a great concern around faculty workload. Increasing the number of credit hours per class requires faculty to prepare for fewer classes, providing time to increase focus on each. (University of Oregon, St. Joseph's College of Maine, Elon University).

Comments made by academic officers at both Portland State University and Portland Community College included the possibility for this system to better serve a more non-traditional, working class student population, who need the flexibility provided by four credit classes to better manage time.

Other benefits of the four-credit system cited relate to student excellence. Respondents indicated that the four credit classes allow teachers to ask more of students, thereby increasing the intensity of study in each class. Faculty expect students to complete more readings and course work, to focus in depth and to think and analyze on a greater level (as reported by Binghamton University, UNH, Elon U., Portland State University). Both Keene State College and Elon University were able to add an experiential component to their classes when they moved to four credits, enabling the Elon faculty to help students focus on the process of learning. Keene State College reported that students received more feedback from faculty and had more opportunities to participate in class when they had four credit classes.

Some institutions reported that their faculty experienced a reduction in course load under this model. The number of classes decreases and classroom space increases, resulting in more flexible class scheduling (University of Oregon, Keene State College, St. Joseph's College of Maine, Portland State University). St. Joseph's College of Maine representatives said this format even allowed the school to increase the standards of "scholastic productivity." In addition to the benefit of having all departments re-evaluate their curriculum, it was also noted by Elon

University and St. Joseph's College of Maine, that students could, if they wanted and needed to, now take more credits for the same price and graduate earlier.

A plus, indicated by Elon University, was that since they made this shift in credits, the GRE scores of their students have increased and they have more students attending graduate school. The academic officer at Elon credits this success to the new curriculum, stating that students are "more engaged in the way they think about the material."

Drawbacks

In addition to the benefits, there have been drawbacks to this credit change. There may be some difficult challenges in scheduling the new time blocks, limits to the number of classes students can take, issues around transferring credits, establishing standards for the extra credit hour, and issues around accommodating faculty. Taking fewer classes diminishes breadth, while enhancing depth (a concern cited by Binghamton U., UNH, University of Maine at Farmington). Students may take as many as eight fewer courses by graduation time. Another problem was the concern that students would enroll in the same number of classes, and then complain of an increased workload (Keene State College). At UNH, this problem was dealt with by allowing new students and transfers to take only four classes. Once a person has established a solid GPA, only then can he/she take an additional course.

Schools had various ways of dealing with transfer credits, but because so many schools now use four credits, this problem will eventually solve itself. However, currently the schools in Oregon will only accept transfer credits from other schools at the earned credit level. In other words,

students may transfer in 3 credits for a class that PSU offers for four credits. This may result in transfer students needing to take extra classes to make up for some of these credits.

Another issue is how to account for the extra credit-hour. At the University of Oregon some faculty tried to add to their courses a discussion section to be taught by a TA. This increased the cost of the course. Others tried to increase the workload by adding readings and papers, but it was not clear if the workload actually was increased to the quantity value of a credit. And sometimes courses remained the same, despite the additional credit.

The issues around faculty workload were varied. Schools that compensate faculty based on credits taught now had more “expensive” instruction costs. The academic officer at the University of Oregon indicated that in some cases, because faculty had less to teach (three classes instead of four) they were also less available on campus, to students and for other administrative requirements.

Process of Switching

How schools change from three credits to four differs from campus to campus. In almost all cases, however, the Faculty Senate is a prime mover, as is the Provost. In many cases, the change came as a result of a general education review at the institution. The Provost and Vice President of Academic Affairs at the University of Maine at Farmington reported that they had been working on curriculum revisions for two years and “switching to four credits has meant re-thinking the mix of courses in all our programs; in some instances, old courses have been retained but revised; in other cases, portions of a discipline have been redesigned to create a different mix of offerings”. The other thing that has been redesigned is the class-scheduling grid.

“Our faculty agreed that four credits merited more class meeting time, but settled on a system with some flexibility (180-200 minutes per week for a standard course)” (U Maine, Farmington)

The Interim Vice President of Academic Affairs at Keene State College said that their impetus for change came initially from the English department. They were given some money to examine their program and student feedback. They were the first department to move to a four-credit system, followed by Management and then Film Studies; soon after, an institution-wide change was proposed and was recently passed by the faculty senate. It will go into full effect Fall 2007.

At St. Joseph’s College of Maine the change was suggested to the faculty senate. Each department was asked to do a full program review and to demonstrate how the change would affect each major and minor. All faculty were involved in the process, and the school is now all four-credit. At Portland Community College, the process began almost three years ago with a college-wide discussion with the faculty and student services serving on an exploratory committee. Their results were then given to the Faculty Senate for support. From there the process went to an educational advisory counsel made up of student representatives, administration and faculty. Once they agreed to it, it went to the President. Then each department was asked to address how courses would be changed, how the increased credit was justified, and what the benefit or loss would be to the students. Each revised class had to be approved by a curriculum committee made up of faculty and administrators.

Assessment/Learning Outcome

The issue of assessment and learning outcomes has not yet been addressed.

References

Kolb, D.A. (1984). The process of learning (Chapter 2) in *Experiential Learning: Experience as the source of learning and development*. Englewood Cliffs: New Jersey. Prentice-Hall, Inc. (p.20- 38)

URI website

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Gordon Leversee (Interim VP of AA)

St. Joseph's College of Maine

Dr. Daniel Sheridan (Academic VP)-

Elon University

Dr. Nancy Midget (Associate Provost)

Table 1. Fall 2005

Percentage of Students in Each Year

Current Credits	Freshman	Sophomore	Junior	Senior
12	12	25.2	27	23.6
13	23.5	12	9	9.6
14	12.2	8.9	5.4	5
15	14.8	27.9	30.2	33.2
16	29.8	12.3	10.1	7.7
17	5.2	6.7	5.4	7.3
18	1.9	4.6	8.9	8.6
19	0.6	2	3.1	3
20			0.4	1
21		0.2	0.2	0.5
22				0.2

Appendix 1

Component	Min Units	Max Units	Subject	Catalog	Long Title
LEC	4	4	AFS	434	Aquatic Food Quality and Processing
LEC	4	4	APG	300	Human Fossil Record
LEC	4	4	BCH	481	Principles Of Biochemistry I
LEC	4	4	BCH	482	Principles Of Biochemistry Ii
LEC	4	4	BCH	522	Plant Molecular Biology
LEC	4	4	BIO	101	Principles of Biology I
LEC	4	4	BIO	102	Principles Of Biology II
LEC	4	4	BIO	121	Human Anatomy
LEC	4	4	BIO	302	Animal Development
LEC	4	4	BIO	304	Comparative Vertebrate Anatomy
LEC	4	4	BIO	311	Plant Anatomy
LEC	4	4	BIO	323	Field Botany And Taxonomy
LEC	4	4	BIO	332	Plant Pathology
LEC	4	4	BIO	350	Evolution
LEC	4	4	BIO	354	Invertebrate Zoology
LEC	4	4	BIO	360	Marine Biology
LEC	4	4	BIO	418	Ecology of Marine Plants
LEC	4	4	BIO	432	Mycology: Introduction to Fungi
LEC	4	4	BIO	458	Freshwater Ecology
LEC	4	4	BIO	465	Biology Of Algae
LEC	4	4	BIO	515	Light Microscopy Research Methods
LEC	4	4	BIO	522	Plant Molecular Biology
LEC	4	4	BPS	410	Foundations of Human Disease IV: Endocrinology, Gastroenterology, Hematology- Oncology, Molecular Gen
LEC	4	4	CHE	447	Food Engineering
LEC	4	4	CHM	212	Quantitative Analysis
LEC	4	4	CHM	291	Organic Chemistry
LEC	4	4	CHM	292	Organic Chemistry
LEC	4	4	CMD	465	Clinical Methods In Communicative Disorders
LEC	4	4	CMD	551	Measurement Of Hearing I
LEC	4	4	CMD	552	Measurement Of Hearing Ii
LEC	4	4	CMD	557	Electrophysiological Measures In Audiology
LEC	4	4	CMD	564	Language Disorders In School-Aged Children

LEC	4	4	CMD	584	Language Disorders in Developmentally Young Children
LEC	4	4	CMD	658	Advanced Electrophysiological Assessment of Hearing
LEC	4	4	CPL	525	Introduction To Planning Methods
LEC	4	4	CPL	526	Techniques And Methodologies Of Planning Research
LEC	4	4	CSC	101	Computing Concepts
LEC	4	4	CSC	110	Survey of Computer Science
LEC	4	4	CSC	200	Computer Problem Solving For Science And Engineering
LEC	4	4	CSC	201	Introduction To Computer Programming
LEC	4	4	CSC	211	Introductory Programming and Design
LEC	4	4	CSC	212	Data Structures and Abstractions
LEC	4	4	CSC	301	Fundamentals of Programming Languages
LEC	4	4	CSC	305	Software Engineering
LEC	4	4	CSC	320	Social Issues in Computing
LEC	4	4	CSC	340	Mathematical Foundations of Computer Science
LEC	4	4	CSC	350	Fundamentals Of Mathematical Computation
LEC	4	4	CSC	402	Compiler Design
LEC	4	4	CSC	406	Computer Graphics
LEC	4	4	CSC	411	Computer Organization
LEC	4	4	CSC	412	Operating Systems and Networks
LEC	4	4	CSC	415	Introduction to Parallel Computing
LEC	4	4	CSC	436	Database Management Systems
LEC	4	4	CSC	440	Algorithms and Data Structures
LEC	4	4	CSC	445	Models of Computation
LEC	4	4	CSC	481	Artificial Intelligence
LEC	4	4	CSC	501	Programming Language Semantics
LEC	4	4	CSC	502	Theory of Compilers
LEC	4	4	CSC	505	Advanced Topics in Software Engineering
LEC	4	4	CSC	509	Object-Oriented System Design
LEC	4	4	CSC	511	Advanced Computer Organization
LEC	4	4	CSC	512	Topics In Distributed Systems
LEC	4	4	CSC	517	Design and Analysis of VLSI Systems
LEC	4	4	CSC	519	Computer Networks
LEC	4	4	CSC	536	Topics in Data Management Systems
LEC	4	4	CSC	541	Advanced Topics In Algorithms
LEC	4	4	CSC	542	Mathematical Analysis of Algorithms

LEC	4	4	CSC	544	Theory Of Computation
LEC	4	4	CSC	550	Computer Algebra
LEC	4	4	CSC	492K	Machine Learning & Data Mining In The Internet Age
LEC	4	4	CSC	492L	Multimedia Programming
LEC	4	4	CSC	492M	3D Graphics Design
LEC	4	4	CSC	492Q	Web Databases
LEC	4	4	CSC	592Q	Web Databases
LEC	4	4	CSC	592R	Three D Graphics: Geometry, Models and Animation
LEC	4	4	CSC	592S	Special Topics:Bioinformatics I
LEC	4	4	CSC	592T	3D Graphics for Games Design
LEC	4	4	CVE	450	Simulation Based Design For Civil Engineers
LEC	4	4	ECN	376	Introduction To Econometrics
LEC	4	4	ECN	576	Econometrics
LEC	4	4	ECN	676	Advanced Econometrics
LEC	4	4	EDC	426	Methods and Materials in Primary School Teaching
LEC	4	4	EDC	564	Diagnosis of Literacy Difficulties
LEC	4	4	ELE	306	Electronic Design Automation Laboratory
LEC	4	4	ELE	342	Electronics I
LEC	4	4	ELE	343	Electronics II
LEC	4	4	ELE	401	Lasers, Optical Systems And Communications
LEC	4	4	ELE	405	Digital Computer Design
LEC	4	4	ELE	408	Computer Organization Laboratory
LEC	4	4	ELE	423	Electromagnetic Fields II
LEC	4	4	ELE	427	Electromechanical Systems Lab
LEC	4	4	ELE	432	Electrical Engineering Materials
LEC	4	4	ELE	436	Communication Systems
LEC	4	4	ELE	444	Advanced Electronic Design
LEC	4	4	ELE	447	Digital Integrated Circuit Design
LEC	4	4	ELE	458	Digital Controls Laboratory
LEC	4	4	ELE	488	Biomedical Engineering I
LEC	4	4	ELE	489	Biomedical Engineering II
LEC	4	4	ELE	503	Linear Control Systems
LEC	4	4	ELE	506	Digital Signal Processing
LEC	4	4	ELE	509	Introduction to Random Processes
LEC	4	4	ELE	510	Communication Theory
LEC	4	4	ELE	535	Bicmos Integrated Circuit Design

LEC	4	4	ELE	537	Digital Integrated Circuit Design II
LEC	4	4	ELE	541	Semiconductor Test Engineering Instrumentation
LEC	4	4	ELE	543	Computer Networks
LEC	4	4	ELE	544	Computer Arithmetic for VLSI
LEC	4	4	ELE	545	Design of Digital Circuits
LEC	4	4	ELE	548	Computer Architecture
LEC	4	4	ELE	549	Computer System Modeling
LEC	4	4	ELE	588	Biomedical Engineering I
LEC	4	4	ELE	589	Biomedical Engineering II
LEC	4	4	ELE	658	Instruction Level Parallelism
LEC	4	4	EVS	482	Innovative Subsurface Remediation Technologies
LEC	4	4	EVS	484	Environmental Hydrogeology
LEC	4	4	EVS	582	Innovative Subsurface Remediation Technologies
LEC	4	4	EVS	584	Environmental Hydrogeology
LEC	4	4	FST	341	Marine Propulsion Systems
LEC	4	4	GEO	103	Understanding the Earth
LEC	4	4	GEO	210	Landforms: Origin and Evolution
LEC	4	4	GEO	240	Prehistoric Life
LEC	4	4	GEO	320	Earth Materials
LEC	4	4	GEO	321	Rocks and Geologic Processes
LEC	4	4	GEO	350	Evolution
LEC	4	4	GEO	370	Structure of the Earth
LEC	4	4	GEO	450	Introduction Of Sedimentary Geology
LEC	4	4	GEO	468	Ground-water Chemistry
LEC	4	4	GEO	482	Innovative Subsurface Remediation Technologies
LEC	4	4	GEO	483	Hydrogeology
LEC	4	4	GEO	484	Environmental Hydrogeology
LEC	4	4	GEO	488	Geologic Evolution of North America
LEC	4	4	GEO	582	Innovative Subsurface Remediation Technologies
LEC	4	4	GEO	584	Environmental Hydrogeology
LEC	4	4	GER	111	Intensive Beginning German
LEC	4	4	GER	112	Intensive Beginning German
LEC	4	4	GER	113	Intensive Intermediate German
LEC	4	4	GER	114	Intensive Intermediate German
LEC	4	4	GER	215	Advanced Conversational German
LEC	4	4	GER	216	Advanced Conversational German

LEC	4	4	HDF	203	Introduction to Work with Children
LEC	4	4	HDF	303	Early Childhood Practicum
LEC	4	4	HDF	306	Infant Development
LEC	4	4	HDF	314	Introduction to Gerontology
LEC	4	4	LAR	300	Computers In Landscape Architecture
LEC	4	4	LAR	345	Landscape Construction I
LEC	4	4	LAR	346	Landscape Construction Ii
LEC	4	4	MCE	503	Linear Control Systems
LEC	4	4	MIC	201	Introductory Medical Microbiology
LEC	4	4	MIC	211	Introductory Microbiology
LEC	4	4	MIC	576	Marine Bact
LEC	4	4	MTH	141	Introductory Calculus With Analytic Geometry
LEC	4	4	MTH	142	Intermediate Calculus With Analytic Geometry
LEC	4	4	NFS	434	Marine Food Processing
LEC	4	4	NFS	435	Food Product Development
LEC	4	4	NRS	583	Innovative Subsurface Remediation Technologies
LEC	4	4	NRS	584	Environmental Hydrogeology
LEC	4	4	NUR	500	General Study Of Nursing Knowledge For Nursing Practice
LEC	4	4	OCE	311	Coastal Measurements And Applications
LEC	4	4	OCE	425	Coastal Experiments
LEC	4	4	OCG	123	Oceans, Atmospheres, And Global Change
LEC	4	4	OCG	561	Biological Oceanography
LEC	4	4	OCG	576	Marine Bact
LEC	4	4	PHP	410	Foundations of Human Disease IV: Endocrinology, Gastroenterology, Hematology-Oncology, Molecular Gen
LEC	4	4	PHT	500	Human Anatomy and Histology
LEC	4	4	PHT	538	Professional Problems and Public Relations
LEC	4	4	PLS	200	Introduction to Plant Protection
LEC	4	4	PLS	205	Population, Environment And Plant Biology I
LEC	4	4	PLS	215	Propagation Of Plant Materials
LEC	4	4	PLS	250	Plant Breeding And Genetics
LEC	4	4	PLS	332	Plant Pathology
LEC	4	4	PLS	471	Plant Improvement

LEC	4	4	PLS	475	Plant Nutrition and Soil Fertility
LEC	4	4	PLS	571	Plant Improvement
LEC	4	4	PSY	301	Introduction To Experimental Psychology
LEC	4	4	REN	534	Economics of Natural Resources
LEC	4	4	REN	576	Econometrics
LEC	4	4	REN	634	Advanced Economics of Natural and Environmental Resources
LEC	4	4	REN	676	Advanced Econometrics
LEC	4	4	STA	576	Econometrics
LEC	4	4	TMD	325	Apparel I
LEC	4	4	TMD	335	Apparel II