

2013-2014 LONG SIGNATURE SHEET



UNC CHARLOTTE

Proposal Number: ITCS 11-12-13

Proposal Title: Establishment of a new course ITCS 6152/8152: Robot Motion Planning

Originating Department: Computer Science

TYPE OF PROPOSAL: UNDERGRADUATE _____ GRADUATE X _____ UNDERGRADUATE & GRADUATE _____
(Separate proposals sent to UCCC and Grad. Council)

DATE RECEIVED	DATE CONSIDERED	DATE FORWARDED	ACTION	SIGNATURES
November 12, 2013	November 22, 2103	November 25, 2013	Approved	<u>DEPARTMENT CHAIR</u> William Ribarsky
November 25, 2013	November 25, 2013	November 25, 2013	Approved	<u>COLLEGE CURRICULUM COMMITTEE CHAIR</u> Srinivas Akella
November 25, 2013	December 5, 2013	December 5, 2013	Approved	<u>COLLEGE FACULTY CHAIR (if applicable)</u> K.R. Subramanian
December 5, 2013	December 5, 2013		Approved	<u>COLLEGE DEAN</u> Yi Deng
			Approved	<u>GENERAL EDUCATION</u> (if applicable; for General Education courses) [print name here:]
			Approved	<u>UNDERGRADUATE COURSE & CURRICULUM COMMITTEE CHAIR</u> (for undergraduate courses only)
12-6-13	1-14-14	14 JAN 2014	Approved	<u>GRADUATE COUNCIL CHAIR</u> (for graduate courses only) Alan R. Freitag
				<u>FACULTY GOVERNANCE ASSISTANT</u> (Faculty Council approval on Consent Calendar)
				<u>FACULTY EXECUTIVE COMMITTEE</u> (if decision is appealed)



UNC CHARLOTTE

LONG FORM COURSE AND CURRICULUM PROPOSAL

*To: Graduate Council Chair

From: Department of Computer Science

Date: November 12, 2013

Re: Establishment of a new course ITCS 6152/8152: Robot Motion Planning

The Long Form is used for major curriculum changes. Examples of major changes can include: creation of a new major, creation of a new minor, creation of a new area of concentration, or significant changes (more than 50%) to an existing program (Note: changing the name of an academic department does not automatically change the name(s) of the degree(s). The requests must be approved separately by the Board of Governors.)

Submission of this Long Form indicates review and assessment of the proposed curriculum changes at the department and collegiate level either separately or as part of ongoing assessment efforts.

*Proposals for undergraduate courses should be sent to the Undergraduate Course and Curriculum Committee Chair. Proposals related to both undergraduate and graduate courses, (e.g., courses co-listed at both levels) must be sent to both the Undergraduate Course and Curriculum Committee and the Graduate Council.

I. HEADING AND PROPOSAL NUMBER

ITCS 11-12-13

University of North Carolina at Charlotte

New Graduate Course Proposal from Department of Computer Science

A. TITLE. Establishment of a new course ITCS 6152/8152 “Robot Motion Planning”

II. CONTENT OF PROPOSALS

A. PROPOSAL SUMMARY.

1. SUMMARY.

The Computer Science Department proposes to add a new elective course ITCS 6152/8152, “Robot Motion Planning” to the Intelligent and Interactive Systems category of the graduate curriculum. This elective course is intended for MS and PhD students in Computer Science.

B. JUSTIFICATION.

- 1.** Identify the need addressed by the proposal and explain how the proposed action meets the need.

The ITCS 6152/8152 course “Robot Motion Planning” will address the need for training computing professionals in robotics and artificial intelligence techniques used in robotics, computer aided design and manufacturing, and computer games. The proposed course will provide students with hands-on experience with relevant technical skills. The proposed ITCS 6152 course will be included in the Intelligent and Interactive Systems concentration of the MS in Computer Science program. This will permit MS in Computer Science students to use this course as a breadth course towards their degree requirements.

- 2.** Discuss prerequisites/corequisites for course(s) including class-standing, admission to the major, GPA, or other factors that would affect a student’s ability to register.

The pre-requisite for this course is ITCS 6114, or permission of instructor. ITCS 6114: Algorithms and Data Structures is a required course for MS students in Computer Science.

3. Demonstrate that course numbering is consistent with the level of academic advancement of students for whom it is intended.

The course number will be ITCS 6152/8152. This number positions the course as a graduate level course for MS and PhD students in the Computer Science department.

4. In general, how will this proposal improve the scope, quality and/or efficiency of programs and/or instruction?

This course will be a hands-on introduction to robotics and artificial intelligence techniques used in robotics, computer aided design and manufacturing, and computer games. As such, this will be a useful elective course for students in the Computer Science MS and PhD programs, and for students in the College of Engineering.

5. If course(s) has been offered previously under special topics numbers, give details of experience including number of times taught and enrollment figures.

The course has been previously taught as a special topics graduate course ITCS 6010/8010 in Spring 2010 and Fall 2012. The course enrollments were 11 and 7 respectively.

- C. IMPACT.** Changes to courses and curricula often have impacts both within the proposing department as well as campus-wide. What effect will this proposal have on existing courses and curricula, students, and other departments/units? Submit an Impact Statement that fully addresses how you have assessed potential impacts and what the impacts of this proposal might be. Consider the following:

1. What group(s) of students will be served by this proposal? (Undergraduate and/or graduate; majors and/or non-majors, others? Explain). Describe how you determine which students will be served.

This elective course will primarily serve MS and PhD students in the Computer Science department in the College of Computing and Informatics.

- 2.** What effect will this proposal have on existing courses and curricula?
- a.** When and how often will added course(s) be taught?

This elective course will be taught in on demand. It is anticipated that there will be sufficient demand for the course for it to be offered every other year.

- b.** How will the content and/or frequency of offering of other courses be affected?

This elective course will complement existing graduate courses in the College of Computing and Informatics. The course content does not overlap with other Intelligent and Interactive Systems courses in the college. There will not be significant impact on the frequency of other offerings and enrollment in other courses.

- c.** What is the anticipated enrollment in course(s) added (for credit and auditors)?

The anticipated enrollment in the course is 10 students per offering, with about 6 coming from the MS and PhD programs in CCI and about 4 coming from the Electrical and Computer Engineering department.

- d.** How will enrollment in other courses be affected? How did you determine this?

We expect minimal impact of the ITCS 6152/8152 class on the enrollment of other classes. Since the only prerequisite is a required course for MS and PhD students in Computer Science (ITCS 6114 Algorithms and Data Structures), these students will not increase the enrollment in the ITCS 6114 course. Students from the College of Engineering will be a minority of the students in the ITCS 6152/8152 course and current course offerings of ITCS 6114 should be able to absorb the additional demand.

- e.** Identify other areas of catalog copy that would be affected, including within other departments and colleges (e.g., curriculum outlines, requirements for the degree, prerequisites, articulation agreements, etc.)

The proposed courses should be added as elective options. The proposed ITCS 6152 course will be included in the Intelligent and Interactive Systems concentration of the MS in Computer Science program. This will permit MS in Computer Science students to use this course as a breadth course towards their degree requirements. There will be no other changes unless programs choose to include ITCS 6152/8152.

III. RESOURCES REQUIRED TO SUPPORT PROPOSAL.

When added resources are not required, indicate “none”. For items which require “none” explain how this determination was made.

- A. **PERSONNEL**. Specify requirements for new faculty, part-time teaching, student assistants and/or increased load on present faculty. List by name qualified faculty members interested in teaching the course(s).

No new faculty are required to teach this course.

Srinivas Akella, Associate Professor in Computer Science, has developed this course and is interested in offering this course. Jing Xiao, Professor in Computer Science, is also qualified and interested in offering this course.

- B. **PHYSICAL FACILITY**. Is adequate space available for this course?

No new physical facilities are needed.

- C. **EQUIPMENT AND SUPPLIES**: Has funding been allocated for any special equipment or supplies needed?

No new equipment and supplies are needed to teach the courses.

- D. **COMPUTER**. Specify any computer usage (beyond Moodle) required by students and/or faculty, and include an assessment of the adequacy of software/computing resources by available for the course(s).

Students will use the computing facilities in the Woodward 120 lab in Computer Science to complete their course projects and assignments. These facilities are adequate for the course.

- E. **AUDIO-VISUAL**. If there are requirements for audio-visual facilities beyond the standard classroom podiums, please list those here.

This course requires only the use of existing presentation equipment in classrooms. No additional audio/visual equipment or services are needed.

- F. **OTHER RESOURCES**. Specify and estimate cost of other new/added resources required, e.g., travel, communication, printing and binding.

This course does not require any additional resources.

- G. SOURCE OF FUNDING.** Indicate source(s) of funding for new/additional resources required to support this proposal.

This course does not require any additional funding.

IV. CONSULTATION WITH THE LIBRARY AND OTHER DEPARTMENTS OR UNITS

- A. LIBRARY CONSULTATION.** Indicate written consultation with the Library Reference Staff at the departmental level to ensure that library holdings are adequate to support the proposal prior to its leaving the department. (Attach copy of [Consultation on Library Holdings](#)).

Library consultation was initiated on 11-12-2013 and completed on 11-14-2013 by Dr. Melanie Sorrell (see attached Library Consultation document in Appendix C).

- B. CONSULTATION WITH OTHER DEPARTMENTS OR UNITS.** List departments/units consulted in writing regarding all elements outlined in IIC: Impact Statement, including dates consulted. Summarize results of consultation and attach correspondence. Provide information on voting and dissenting opinions (if applicable).

Sent to Electrical and Computer Engineering on 11-12-2013.
Endorsed by Graduate Program Director of Electrical and Computer Engineering on 11-19-2013.

Sent to Software and Information Systems on 11-12-2013.
Endorsed by Chair of Software and Information Systems on 12-4-2013.

Sent to Bioinformatics and Genomics on 11-12-2013.
Endorsed by Chair of Bioinformatics and Genomics on 11-12-2013.

V. INITIATION, ATTACHMENTS AND CONSIDERATION OF THE PROPOSAL

- A. ORIGINATING UNIT.** Briefly summarize action on the proposal in the originating unit including information on voting and dissenting opinions.

The proposed course was approved by the Department of Computer Science on 11-25-2013.

- B. CREDIT HOUR. (Mandatory if new and/or revised course in proposal)**

Review statement and check box once completed:

- ☐ The appropriate faculty committee has reviewed the course outline/syllabus and has determined that the assignments are sufficient to meet the University definition of a [credit hour](#).

C. ATTACHMENTS.

1. CONSULTATION: Attach relevant documentation of consultations with other units.

Attached as Appendix D.

Endorsed by Graduate Program Director of Electrical and Computer Engineering on 11-19-2013.

Endorsed by Chair of Software and Information Systems on 12-4-2013.

Endorsed by Chair of Bioinformatics and Genomics on 11-12-2013.

2. COURSE OUTLINE/SYLLABUS: For undergraduate courses attach course outline(s) including basic topics to be covered and suggested textbooks and reference materials with dates of publication. For Graduate Courses attach a course syllabus. Please see Boiler Plate for Syllabi for New/Revised Graduate Courses.

Attached as Appendix A.

3. PROPOSED CATALOG COPY: Copy should be provided for all courses in the proposal. Include current subject prefixes and course numbers, full titles, credit hours, prerequisites and/or corequisites, concise descriptions, and an indication of when the courses are to be offered as to semesters and day/evening/weekend. Copy and paste the [current catalog copy](#) and use the Microsoft Word “track changes” feature (or use **red text with “~~strikethrough~~”** formatting for text to be deleted, and adding **blue text with “underline”** formatting for text to be added).

Attached as Appendix B.

- a. For a new course or revisions to an existing course, check all the statements that apply:

- ☐ This course will be cross listed with another course.
- ☒ There are prerequisites for this course.
- ☐ There are corequisites for this course.
- ☐ This course is repeatable for credit.

_____ This course will increase/decrease the number of credits hours currently offered by its program.

_____ This proposal results in the deletion of an existing course(s) from the degree program and/or catalog.

For all items checked above, applicable statements and content must be reflected in the proposed catalog copy.

b. If overall proposal is for a new degree program that requires approval from General Administration, please contact the facultygovernance@uncc.edu for consultation on catalog copy.

4. ACADEMIC PLAN OF STUDY (UNDERGRADUATE ONLY): Does the proposed change impact an [existing Academic Plan of Study](#)?

☐ Yes. If yes, please provide updated Academic Plan of Study in template format.

☐ No.

5. STUDENT LEARNING OUTCOMES (UNDERGRADUATE & GRADUATE): Does this course or curricular change require a change in Student Learning Outcomes (SLOs) or assessment for the degree program?

☐ Yes. If yes, please provide updated SLOs in template format.

X No.

6. TEXTBOOK COSTS: It is the policy of the Board of Governors to reduce textbook costs for students whenever possible. Have electronic textbooks, textbook rentals, or the buyback program been considered and adopted?

X Yes. Briefly explain below.

☐ No. Briefly explain below.

Yes, the proposed textbooks can be made available by textbook rentals and book buyback programs.

IMPORTANT NOTE: A Microsoft Word version of the final course and curriculum proposal should be sent to facultygovernance@uncc.edu upon approval by the Undergraduate Course and Curriculum Committee and/or Graduate Council chair.

Appendix A

Syllabus

ITCS 6152/8152: Robot Motion Planning

1. Course Number and Title:
ITCS 6152/8152: Robot Motion Planning

2. Course Description (Catalog Description)

ITCS 6152/8152. Robot Motion Planning. (3) Prerequisites: ITCS 6114 or permission of instructor. This course is an introduction to algorithmic techniques for robot motion planning. Topics will include configuration space representations, roadmap methods, cell decomposition methods, potential field techniques, randomized path planning, collision detection, nonholonomic motion planning, multiple robot coordination, and manipulation planning. We will motivate these techniques by applications of motion planning to mobile robots and robot manipulators, assembly planning, computer aided design, computer graphics, and bioinformatics. (On demand).

3. Pre- or Co-requisites

Prerequisites: ITCS 6114: Algorithms and Data Structures, or permission of instructor.

4. Objectives of the course

The objective of this course is for students to understand algorithmic techniques for robot motion planning. The students will learn about mathematical representations and algorithms and data structures used in robot motion planning. Topics will include configuration space representations, roadmap methods, cell decomposition methods, potential field techniques, randomized path planning, collision detection, nonholonomic motion planning, multiple robot coordination, and manipulation planning. The techniques will be motivated by applications of motion planning to mobile robots and robot manipulators, assembly planning, computer aided design, computer graphics, and bioinformatics.

5. Instructional Method

This will be a classroom-based lecture course. Students will be introduced to material through lectures and demonstrations and gain a deeper knowledge through hands-on application of principles and techniques in homework assignments and a course project.

6. Means of student evaluation

The course activities consist of homework and programming assignments, occasional in-class quizzes, a midterm exam, a final exam, and a final course project. Students taking the PhD version of the course (ITCS-8152) will also be required to make a classroom presentation on a topic to be selected with the instructor. There will be five homework assignments, which will be a combination of written homeworks, reading reports on research papers, and programming assignments. The final course project will be an implementation of a motion planning algorithm, to be selected in consultation with the instructor. In addition to a demonstration and presentation of the project, students must submit a written summary of the project. Projects are to be done individually.

Graduate students taking ITCS-6152 and ITCS-8152 will be graded separately. The grading scheme for the course is as follows:

ITCS-6152

Homework assignments and quizzes: 40%

Course project: 25%

Class participation: 5%

Midterm exam: 15%

Final exam: 15%

ITCS-8152

Homework assignments and quizzes: 30%

Course project: 25%

Class participation and presentation: 15%

Midterm exam: 15%

Final exam: 15%

A = 90% or above

B = 80% or above

C = 70% or above

U = below 70%

7. Specify policies that apply to this course:

a. University integrity

Students are encouraged to discuss course material to improve their understanding of the subject. However they must submit their own work for homeworks, quizzes, programming assignments, exams, and the final course project.

Students are allowed to discuss homeworks. Students must however write their homeworks individually. Copying on this course work is not allowed and will result in a 0 for the

submission plus a 5 percentage point penalty on the semester grade and a report to the Dean of Students office.

To ensure academic integrity on programming assignments while permitting students to learn and get help from each other, the following rules will be in force. Students are allowed to work together in interpreting error messages and in finding bugs, but NOT in writing code. Students may not share code, copy code, or discuss code in detail while it is being written or afterwards.

Students may not use code obtained on the web or from other sources (unless permitted by the instructor). Shared or copied code is easy to spot manually and is easily detected using a variety of software tools. Students caught illegally collaborating in writing code or violating the above rules will receive a 0 on the assignment plus a 5 percentage point penalty on their semester grade and a report to the Dean of Students office. Students caught a second time will receive a U (failing grade) in the course and will be reported to the Dean of Students office.

Copying, sharing answers, or using disallowed materials during a quiz or an exam is cheating, of course, and will result in a 0 on the exam, plus a 5 percentage point penalty on the semester grade and a report to the Dean of Students office.

Any student violating these academic honesty rules for a second time will receive a U in the course and will be reported to the Dean of Students office.

Students are responsible for knowing and observing the UNC Charlotte Code of Student Academic Integrity, which defines various forms of academic dishonesty and procedures for responding to them. The Academic Integrity Code is available online at <http://legal.uncc.edu/policies/up-407>. Students found in violation of academic honesty policies will receive a failing grade for the course.

b. Attendance

Attendance Policy: Attendance in class is expected and students are responsible for knowing all material covered in class. A portion of the grade will be determined by class attendance and participation.

c. Grading policy

A = 90% or above
B = 80% or above
C = 70% or above
U = below 70%

d. Additional requirements such as CPR, liability insurance, no phones or beepers in class (whatever are the requirements for that course).

No additional requirements.

8. Probable textbooks or resources

The course has two textbooks:

1. Planning Algorithms, by Steven M. LaValle, Cambridge University Press, 2006.
2. Principles of Robot Motion: Theory, Algorithms, and Implementation, by H. Choset, K. M. Lynch, S. Hutchinson, G. Kantor, W. Burgard, L. E. Kavraki, and S. Thrun, MIT Press, 2005.

9. Topical outline of course content

The topics covered in the course include:

- 1 Introduction to Robot Motion Planning
- 2 Configuration space representations and geometric transformations
- 3 Roadmap methods
- 4 Cell decomposition
- 5 Potential field techniques
- 6 Collision detection
- 7 Sampling-based techniques
- 8 Nonholonomic motion planning
- 9 Multiple robot coordination
- 10 Articulated robots
- 11 Manipulation planning

10. Attachments

None.

Appendix B

Proposed Catalog Copy for ITCS 6152/8152 Course

ITCS 6152. Robot Motion Planning. (3) Prerequisites: ITCS 6114 or permission of instructor. This course is an introduction to algorithmic techniques for robot motion planning. Topics will include configuration space representations, roadmap methods, cell decomposition methods, potential field techniques, randomized path planning, collision detection, nonholonomic motion planning, multiple robot coordination, and manipulation planning. We will motivate these techniques by applications of motion planning to mobile robots and robot manipulators, assembly planning, computer aided design, computer graphics, and bioinformatics. (On demand).

ITCS 8152. Robot Motion Planning. (3) Prerequisites: ITCS 6114 or permission of instructor. This course is an introduction to algorithmic techniques for robot motion planning. Topics will include configuration space representations, roadmap methods, cell decomposition methods, potential field techniques, randomized path planning, collision detection, nonholonomic motion planning, multiple robot coordination, and manipulation planning. We will motivate these techniques by applications of motion planning to mobile robots and robot manipulators, assembly planning, computer aided design, computer graphics, and bioinformatics. (On demand).

For a new course or revisions to an existing course, check all the statements that apply:

- ☐ This course will be cross listed with another course.
- ☒ There are prerequisites for this course.
- ☐ There are co-requisites for this course.
- ☐ This course is repeatable for credit.
- ☐ This course will increase/decrease the number of credits hours currently offered by its program.
- ☐ This proposal results in the deletion of an existing course(s) from the degree program and/or catalog.

**Appendix C
Library Consultation**



J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Srinivas Akella

From: Dr. Melanie Sorrell

Date: 11/14/2013

Subject: ITCS 6152/8152: Robot Motion Planning

Summary of Librarian's Evaluation of Holdings:

Evaluator: Dr. Melanie Sorrell Date: 11/14/2013

Check One:

- | | |
|--------------------------------------------------------------------|----------------------|
| 1. Holdings are superior | _____ |
| 2. Holdings are adequate | _____ x _____ |
| 3. Holdings are adequate only if Dept. purchases additional items. | _____ |
| 4. Holdings are inadequate | _____ |

LC Subject Heading	Total items held
Robotics	619 monographs
Algorithms	646 monographs

Comments:

This is a proposal for a new graduate level course, which reading reports on research papers. Library holdings should be adequate to support student research for this course (see list of items held by subject heading below). Students will have access to relevant databases including INSPEC, IEEE Xplore, Compendex, and the ACM Digital Library.

Robots – Motion	27 monographs
Mobile robots	53 monographs
IEEE Journal on Robotics and Automation	Journal title
IEEE Transactions on Robotics	Journal title
Journal of Mechanisms and Robotics	Journal title

Melanie Sorrell

Evaluator's Signature

11/14/2013

Date

Appendix D
Consultations from Other Units

Consultation with Electrical and Computer Engineering

RE: Consultation for course ITCS 6152/8152: Robot Motion Planning
Joshi, Bharat

To: Akella, Srinivas
Cc: Conrad, Jim; Kakad, Yogendra; Manjrekar, Madhav; Parkhideh, Babak; Ravindran, Arun;
Zhang, Yong; Ferguson, Ian
Tuesday, November 19, 2013 12:12 PM

Srinivas,

We do not have any objections with the ITCS6152/8152 course as listed.

Thanks

Regards,

Bharat

Bharat Joshi, Ph.D. | Associate Professor

Graduate Program Director | Department of Electrical and Computer Engineering

EPIC Room 2248

UNC Charlotte | The William States Lee College of Engineering

9201 University City Blvd. | Charlotte, NC 28223-0001

Phone: 704-687-8407 | Fax: 704-687-4762

bsjoshi@uncc.edu | <http://ece.uncc.edu>

From: Akella, Srinivas

Sent: Sunday, November 17, 2013 4:33 PM

To: Joshi, Bharat

Cc: Conrad, Jim; Kakad, Yogendra; Manjrekar, Madhav; Parkhideh, Babak; Ravindran, Arun; Zhang, Yong; Akella, Srinivas

Subject: RE: Consultation for course ITCS 6152/8152: Robot Motion Planning

Bharat and Jim,

Thanks for the prompt response regarding ITCS 6152/8152: Robot Motion Planning. It is good to hear that there is no overlap with existing ECE courses and so no objection to the course.

Jim brings up good points, and here are my responses:

1. This course focuses on algorithms and math representations for robot motion planning. That is why a knowledge of algorithms and data structures (ITCS 6114) is very helpful.
2. The listed prerequisite is "ITCS 6114 or permission of instructor". This enables students (eg, from ECE or ME) who have not taken ITCS 6114 to still take the course. While motion planners can be implemented using Matlab, many useful geometry, graphics, and motion planning packages are in C/C++. Hence a programming/algorithms background is very useful.
3. I've previously taught the course as a special topics course, and had a couple of ECE students in the class both times.
4. The plan is to offer the course in the Spring every other year, so students who take ECGR 5196 in the Fall can take ITCS 6152 (or ITCS 6151: Intelligent Robotics taught by Jing Xiao) in the Spring.

So the suggestion to cross-list as ECGR 6152/8152 makes good sense. I'd like to do that as a short form once the current long form is formally approved.

Please let me know if you have any other suggestions.

Thanks,
-Srinivas

From: Joshi, Bharat

Sent: Sunday, November 17, 2013 9:48 AM

To: Akella, Srinivas

Cc: Conrad, Jim; Kakad, Yogendra; Manjrekar, Madhav; Parkhideh, Babak; Ravindran, Arun; Zhang, Yong

Subject: RE: Consultation for course ITCS 6152/8152: Robot Motion Planning

Srinivas,

I had requested Jim Conrad to review the proposal. Here are his comments are I concur with him.

Jim's comments:

Revised 10/11/13
OAA/mjw

- This is a very CS-based course, as evident by the prerequisite of an algorithms and data structures course (ITCS6114).
- The material covered does not overlap with anything that ECE teaches.
- Because this course requires ITCS 6114 as a prerequisite, few, if any, ECE students would take it. I predict that 1 ECE student and 0 ME students would take this course annually.
- If CS wanted to coordinate with ECE to find an alternate prerequisite sequence (i.e. ECGR5101, ECGR5196 and ECGR5090 (CompE Research Tools and Techniques)) and/or work with us to cross-list an ECGR course (ECGR6152/8152) I would welcome that.

I find no objections with the ITCS6152/8152 course as listed, only caution them from expecting any ECE students to take it.

End Jim's comments

Please note ECGR 5090 is a special topics course and so it may not be considered a prerequisite till it is catalogued as a regular course.

Thanks

Regards,

Bharat

Bharat Joshi, Ph.D. | Associate Professor

Graduate Program Director | Department of Electrical and Computer Engineering

Revised 10/11/13
OAA/mjw

EPIC Room 2248

UNC Charlotte | The William States Lee College of Engineering

9201 University City Blvd. | Charlotte, NC 28223-0001

Phone: 704-687-8407 | Fax: 704-687-4762

bsjoshi@uncc.edu | <http://ece.uncc.edu>

From: Akella, Srinivas
Sent: Friday, November 15, 2013 10:57 PM
To: Joshi, Bharat
Cc: Akella, Srinivas
Subject: RE: Consultation for course ITCS 6152/8152: Robot Motion Planning

Bharat,

Can you tell me the timeline for your Graduate Committee's review of the long form for ITCS 6152/8152: Robot Motion Planning.

I expect our department will approve the proposal next week, and it will be forwarded to the college (CCI) soon after. It will be great to hear from ECE before it goes to the college.

Thanks,
-Srinivas

From: Joshi, Bharat
Sent: Tuesday, November 12, 2013 3:34 PM
To: Ferguson, Ian; Akella, Srinivas
Cc: Conrad, Jim; Nasipuri, Asis; Sass, Ron
Subject: RE: Consultation for course ITCS 6152/8152: Robot Motion Planning

Ian,

I will do that.

Regards,

Bharat

From: Ferguson, Ian
Sent: Tuesday, November 12, 2013 3:26 PM
To: Akella, Srinivas
Cc: Conrad, Jim; Nasipuri, Asis; Joshi, Bharat; Sass, Ron
Subject: FW: Consultation for course ITCS 6152/8152: Robot Motion Planning

Srinivas

I believe that our Graduate Committee will need to review.

Bharat, you can interact directly with Srinivas as needed and let me know the conclusion.

IanF

From: Akella, Srinivas
Sent: Tuesday, November 12, 2013 3:24 PM
To: Ferguson, Ian
Cc: Akella, Srinivas; Conrad, Jim
Subject: Consultation for course ITCS 6152/8152: Robot Motion Planning

Dear Prof. Ferguson,

I am attaching the Long Form for the proposed course ITCS 6152/8152: Robot Motion Planning for consultation and feedback from the ECE department. This course will serve as an elective for CS MS and PhD students.

Revised 10/11/13
OAA/mjw

I believe the proposed course complements and serves as a logical follow-on to the course ECGR 5196: Introduction to Robotics, taught by Prof. Jim Conrad (cced).

Please let me know if you need any additional information. I look forward to hearing from you.

Thanks,
-Srinivas

Srinivas Akella
Associate Professor
Department of Computer Science Tel: (704) 687-8573
Univ. of North Carolina at Charlotte Email: sakella@uncc.edu
9201 University City Blvd WWW: www.cs.uncc.edu/~sakella
Charlotte, North Carolina 28223

Consultation with Software and Information Systems

Re: Consultation for course ITCS 6152/8152: Robot Motion Planning
Maher, Mary

To: Akella, Srinivas
Wednesday, December 04, 2013 2:55 PM

Srivinas,

Yes, I approve this new course:

ITCS 6152/8152 "Robot Motion Planning"

Professor Mary Lou Maher
Chair, Software Information Systems
Director, Center for Education Innovation
Woodward 310A, UNC Charlotte
9201 University City Blvd. | Charlotte, NC 28223
Phone: 704-687-1940 | Fax: 704-687-6065
M.maher@uncc.edu | <http://sis.uncc.edu/maher-marylou>

From: "Akella, Srinivas" <sakella@uncc.edu>
Date: Sun, 24 Nov 2013 13:18:59 -0500
To: Mary Maher <M.Maher@uncc.edu>
Subject: FW: Consultation for course ITCS 6152/8152: Robot Motion Planning

Hi Mary Lou,

A gentle reminder regarding the long form for ITCS 6152/8152: Robot Motion Planning.

Look forward to your response.

Thanks,
-Srinivas

From: Akella, Srinivas
Sent: Tuesday, November 19, 2013 2:10 PM
To: Maher, Mary
Cc: Zheng, Yuliang
Subject: FW: Consultation for course ITCS 6152/8152: Robot Motion Planning

Hi Mary Lou,

As we just discussed, I understand from Yuliang Zheng that the SIS Graduate Committee supports the proposed course ITCS 6152/8152: Robot Motion Planning. It'll be great to get your official endorsement of the long form.

Thanks,
-Srinivas

From: Akella, Srinivas
Sent: Tuesday, November 12, 2013 2:57 PM
To: Maher, Mary
Cc: Akella, Srinivas
Subject: Consultation for course ITCS 6152/8152: Robot Motion Planning

Dear Mary Lou,

I am attaching the Long Form for the proposed course ITCS 6152/8152: Robot Motion Planning for consultation and feedback from the SIS department. This course will serve as an elective for CS MS and PhD students. I do not see any overlap with courses in your department.

Please let me know if you need any additional information. I look forward to hearing from you.

Thanks,
-Srinivas

Srinivas Akella
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Consultation with Bioinformatics and Genomics

Re: Consultation for course ITCS 6152/8152: Robot Motion Planning
Mays, Larry

To: Akella, Srinivas
Tuesday, November 12, 2013 10:50 PM

I have read your proposal and, on behalf of BiG, I fully support the establishment of this new course.
Larry Mays

From: <Akella>, Srinivas <sakella@uncc.edu>
Date: Tuesday, November 12, 2013 at 4:03 PM
To: Lawrence Mays <lemays@uncc.edu>
Cc: "Akella, Srinivas" <sakella@uncc.edu>
Subject: Consultation for course ITCS 6152/8152: Robot Motion Planning

Dear Larry,

I am attaching the Long Form for the proposed course ITCS 6152/8152: Robot Motion Planning for consultation and feedback from the BIG department. This course will serve as an elective for CS MS and PhD students. While I do not see any overlap with courses in your department, there is potential for applying robot motion planning techniques to bioinformatics problems. For example, I will be discussing the work of Nancy Amato and Lydia Kavraki on protein folding and molecular docking problems.

Please let me know if you need any additional information. I look forward to hearing from you.

Thanks,
-Srinivas

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