

Course Change Request

Date Submitted: 03/15/24 9:07 am

Viewing: **SYST 664 / CSI 674 / OR 664 : Bayesian Artificial Intelligence ~~Bayesian Inference and Decision Theory~~**

Last approved: 09/20/21 6:00 am

Last edit: 03/15/24 9:07 am

Changes proposed by: jxu13

Catalog Pages
referencing this
course

CSI 674:

[Computational Sciences and Informatics \(CSI\)](#)

Select modification type:

In Workflow

1. Registrar
Courses:Crosslisted
2. CDS Chair
3. SYST
Representative-
Graduate
4. EC Associate Dean-
Graduate
5. SC Assistant Dean
6. Assoc Provost-
Graduate
7. Registrar-Courses
8. Banner

Approval Path

1. 03/15/24 9:13 am
Tory Sarro (vsarro):
Approved for
Registrar
Courses:Crosslisted
2. 03/20/24 10:17 am
Jason Kinser
(jkinser): Approved
for CDS Chair
3. 03/21/24 4:17 pm
Jie Xu (jxu13):
Approved for SYST
Representative-
Graduate
4. 04/01/24 2:31 pm
Jennifer Skorzawski-
Ross (jskorzaw):
Approved for EC
Associate Dean-
Graduate

History

1. Mar 7, 2018 by Paulo Costa (pcosta)
2. May 8, 2021 by Tory Sarro (vsarro)
3. Sep 20, 2021 by Tory Sarro (vsarro)

Simple

Substantial

Are you completing this form on someone else's behalf?

No

Effective Term: Fall 2024

Subject Code: SYST - System Engineering

Course Number: 664

Bundled Courses: CSI 674
OR 664

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Bayesian Artificial Intelligence ~~Bayesian Inference and Decision Theory~~

Banner Title: Bayesian AI ~~Inference/Dec Theory~~

Will section titles vary by semester? No

Credits: 3

Schedule Type: Lecture

Hours of Lecture or Seminar per week: 3

Repeatable: May only be taken once for credit (NR)
GRADUATE ONLY

Default Grade Mode: Graduate Regular

Recommended Prerequisite(s):

STAT 544, STAT 554, or equivalent.

Recommended**Corequisite(s):****Required****Prerequisite(s) /****Corequisite(s)****(Updates only):****Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):**

And/Or	(Course/Test Code	Min Grade/Score	Academic Level)	Concurrency?

Registration**Restrictions****(Updates only):****Registrar's Office Use Only - Registration Restrictions:****Field(s) of Study:****Class(es):**

Include

Limited to students with a class of Senior Plus (SCRRCLS_ONLY_SP)

Limited to students with a class of Non Degree (SCRRCLS_ONLY_ND)

Limited to students with a class of Advanced to Candidacy. (SCRRCLS_ONLY_DC)

Limited to students with a class of Graduate. (SCRRCLS_ONLY_GR)

Limited to students with a class of Junior Plus (SCRRCLS_ONLY_JP)

Level(s):

Include

Enrollment limited to students with a level of Non-Degree (SCRRLVL_ONLY_ND)

Limited to undergraduate level students. (SCRRLVL_ONLY_UG)

Limited to graduate level students only. (SCRRLVL_ONLY_GR)

Degree(s):

Exclude

Non-Degree Undergraduate Degree students may not enroll. (SCRRDEG_NO_NDU)

School(s):

Include

Enrollment limited to students in the College of Engineering and Computing.

(SCRRCOL_ONLY_EC)

Limited to students in the College of Science. (SCRRCOL_ONLY_SC)

Catalog**Description:**

Many artificial intelligence problems involve modeling uncertainty. Bayesian probabilistic models represent uncertainty and dependencies between random variables using probability distributions. You will learn the set of rules of probability and computational algorithms to manipulate these distributions. Bayesian approach enhances the effectiveness of conventional AI techniques. This course summarizes various Bayesian-based models and the standard algorithms used with them, supplemented by instances of their practical use. We will discuss applications in science, engineering, economics, medicine, sport, and law. ~~Introduces decision theory and relationship to Bayesian statistical inference. Students will learn the commonalities~~ ~~Teaches commonalities, differences between Bayesian~~ and differences between the Bayesian and frequentist approaches to statistical inference, how to approach a statistics problem from the Bayesian perspective, and ~~problem, and~~ how to combine data with informed expert judgment soundly to derive useful and policy-relevant ~~and policy relevant~~ conclusions. Assignments focus on applying the methods to practical problems. ~~Teaches theory to develop understanding of when and how to apply Bayesian and frequentist methods; and practical procedures for inference, hypothesis testing, and developing statistical models for phenomena. Teaches fundamentals of Bayesian theory of inference, including probability as a representation for degrees of belief, likelihood principle, use of Bayes Rule to revise beliefs based on evidence, conjugate prior distributions for common statistical models, and methods for approximating the posterior distribution. Introduces graphical models for constructing complex probability and decision models from modular components.~~

Justification:

Faculty meeting approved request by instructor to update course.

Does this course cover material which crosses into another department? No

Learning Outcomes:

Will this course be scheduled as a cross-level cross listed section?

Attach Syllabus

Additional Attachments

Specialized Course Categories:

Additional Comments:

**Reviewer
Comments**

Key: 14743