Steven W. Cheung
Chair, Assembly of the
Academic Senate
Faculty Representative,
UC Board of Regents

Academic Senate

Office of the President
1111 Franklin Street
Oakland, CA 94607

senate.universityofcalifornia.edu

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July 24, 2025

Katherine S. Newman
Provost and Executive Vice President
University of California

Re: Approval of Master of Applied Artificial Intelligence for Science at UC Irvine

Dear Provost Newman:

In accordance with the Universitywide Review Processes For Academic Programs, Units, and Research Units (the "Compendium"), and on the recommendation of CCGA, the Academic Council has approved UC Irvine's proposal to establish a self-supporting Master of Applied Artificial Intelligence for Science.

Because this is a new degree title, and the Assembly of the Academic Senate is not meeting within 30 days of CCGA's approval, Council must approve the program per Senate Bylaw 125.B.7.

I am enclosing CCGA's report on its review of the new program, and respectfully request that your office complete the process of obtaining the President's approval.

Thank you for the opportunity to opine. Please do not hesitate to contact me if you have any questions.

Sincerely,

Steven W. Cheung
Chair, Academic Council

cc: Academic Council
        Institutional Research and Academic Planning Analyst Procello
        UCI Senate Executive Director Kim
        Executive Director Lin

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COORDINATING COMMITTEE ON GRADUATE AFFAIRS
James Bisley, Chair
jbisley@mednet.ucla.edu

July 14, 2025

Steven W. Cheung
Chair, Academic Senate

Dear Chair Cheung,

On July 2, CCGA met and reviewed a proposal for a self-supporting Master of Applied Artificial Intelligence for Science from the Irvine division. After discussion, the proposal was approved 11-0-1.

This program aims to equip students with industry-relevant skills in artificial intelligence (AI) and data science, specifically tailored for applications in the physical sciences. It addresses gaps left by traditional data science programs, which typically cater to students with computer science or engineering backgrounds. The program is tailored to meet the needs of both students and companies, offering a comprehensive pathway to gain AI and data science expertise alongside existing domain knowledge. It features high-quality instruction and projects centered on team collaboration and industry-relevant data sets and challenges.

The program will consist of a total of 40 units, including six 4-unit core and special topic lecture courses, three 4-unit project courses, and two 2-unit seminars. A distinguishing feature is the project courses, one offered every quarter, providing opportunities for students to work individually and in teams manipulating science data sets and creating a final capstone project. The program will be governed by an Executive Committee comprising a Program Director and faculty members from various departments within the School of Physical Sciences. Evaluation will be based on several goals, including knowledge advancement, industry collaboration, a high placement rate, and the recruitment of underrepresented groups in STEM. The program also emphasizes professional development and ethics in data science, ensuring graduates are well-prepared for careers in industry.

CCGA secured three reviewers for this proposal. All three reviews are positive and affirm the program's strong potential. Reviewers commend the program's structure, academic rigor, and alignment with industry needs. These are detailed in the Lead Reviewer's report, attached. In addition to these strong endorsements, the reviewers offer several thoughtful comments and suggestions for improvement. These include clarifying the expected workload for the intensive nine-month timeline, ensuring adequate support and mentorship during the capstone project, and potentially expanding elective options. While none of these suggestions raise fundamental concerns about the program's viability, CCGA strongly recommends that the proposers consider taking them into account.

As documented in its report (attached), UCPB recommends that CCGA approve this proposal.

As you know, CCGA's approval is the last stop of the Academic Senate side of the systemwide review and approval process except when the new degree title must be approved by the Academic Council. I submit this for your review; please do not hesitate to contact me if you have questions regarding the proposal.

Sincerely,

James Bisley
Chair, CCGA

cc: Academic Senate Vice Chair Palazoglu
        Academic Senate Executive Director Lin
        Academic Senate Assistant Director LaBriola
        CCGA Members
        Academic Planning and Research Analyst Procello
        UCI Interim Dean of the Graduate Division Smith
        UCI Senate Executive Director Kim
        UCI Senate Analyst Nguyen

Review of a proposed *Master of Applied Artificial Intelligence for Science* by the School of Physical Sciences, UCI

CCGA Lead Reviewer: Ilan Adler   June 27, 2025

Summary

The proposed UC Irvine Master of Applied Artificial Intelligence for Science is a self-supporting graduate program within the School of Physical Sciences, which comprises four departments: Chemistry, Earth System Science, Mathematics, and Physics & Astronomy.

The program is specifically designed to equip students with industry-relevant skills in Artificial Intelligence (AI), Machine Learning (ML), and Data Science (DS), with a focus on applications in the physical sciences - setting it apart from traditional AI programs.

This Plan II Master's degree culminates in a capstone project and is designed to be completed in three academic quarters. The curriculum consists of 40 required units: 24 units of core courses in AI, ML, and DS; 12 units dedicated to hands-on projects using real-world data, and 4 units focused on ethics and professional development. Some students may have the option to extend their project work into the summer for an additional fee.

The program will be supported by 13 core faculty members from the School of Physical Sciences: 4 from Physics & Astronomy, 4 from Mathematics, 3 from Chemistry, and 2 from Earth System Science. Tuition is set at $47,800, with a projected annual increase of 4.5% over the next five years.

Enrollment is expected to reach 40 students in each of the first two years, the minimum needed for sustainability. Starting in year three, enrollment is projected to rise to 60 students annually, at which point the program is expected to become financially profitable.

To support initial startup costs, the program will receive a $300,000 campus loan, with plans to achieve solvency by year three and to begin repaying the loan over years three through five.

Initial Evaluation

The proposal is very well written and well organized, addressing all the essential components expected in a submission of this nature - such as market research, admissions, academic program details, bylaws, and budget. This thoroughness likely reflects the reported dialogue between the proposers and UCI's Graduate Council and Council on Planning and Budget.

The proposal is notably strengthened by uniformly positive - and often enthusiastic - letters of support. These include endorsements from the chairs of all the departments within the School of Physical Sciences; backing from the UCI's Council on Equity and Inclusion regarding the program's concrete plans to enhance diversity; and enthusiastic letters from key industry partners.

Particularly noteworthy is a letter from the Dean of UCI's School of Information and Computer Sciences, which clearly articulates how this program differs from the professional Master's programs in Computer Science and Data Science offered by that school. Importantly, the letter attests to the distinctiveness of the proposed program relative to more general professional Master's programs in AI.

In addition, the proposal received unanimous approval from UCI's Academic Senate, Graduate Council, and Council on Planning and Budget.

External Reviewers

Three external reviewers - established experts in relevant fields - submitted reviews:

- **Reviewer #1:** Professor Deanna Needell, Department of Mathematics, UCLA
- **Reviewer #2:** Professor Michael Williams, Department of Physics, MIT
- **Reviewer #3:** Professor of Computer Science and Engineering, UC campus (not UCI)

All three reviews are positive and affirm the program's strong potential. Reviewers commend the program's structure, academic rigor, and alignment with industry needs.

Reviewer #1 emphasizes that the program "fills a gap" and praises its "hands-on experience and practical emphasis," noting that the courses and activities are of "high quality" and "align with what many employers are looking for today." They also highlight the strength of the faculty, expressing "strong confidence" in their ability to teach and grow the program.

Reviewer #2 echoes this enthusiasm, writing, "I really like the program," and affirming that graduates will be "much better prepared for a job in applied AI for science." While acknowledging compromises needed to fit the program into nine months, they view these as reasonable trade-offs. They also underscore the strong faculty base and real-world expertise within the School of Physical Sciences.

Reviewer #3 finds the curriculum "well-designed" and sees strong employment potential for graduates with both AI/ML fluency and physical science domain knowledge. While noting that the market research could be more targeted, they affirm that the program is well-positioned to attract applicants and meet growing demand in the field.

In addition to these strong endorsements, the reviewers offer several thoughtful comments and suggestions for improvement. These include, for example, clarifying the expected workload for the intensive 9-month timeline, ensuring adequate support and mentorship during the capstone project, and potentially expanding elective options. While none of these suggestions raise fundamental concerns about the program's viability, they are useful and constructive.

Recommendation

Based on the above and the approval by the University Committee on Planning and Budget regarding the self-supporting nature of the proposed program, we recommend approval of the

program, with the request that the proposers carefully review the reviewers' suggestions and implement those they find appropriate and feasible.

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UNIVERSITY COMMITTEE ON PLANNING AND BUDGET (UCPB)
Tim Groeling
groeling@comm.ucla.edu

4 June 2025

James Bisley
Chair, CCGA

RE: Master of Applied Artificial Intelligence for Science, UC Irvine

Dear James,

UCPB discussed the proposed self-supporting degree from UC Irvine. The committee noted the role this program will provide in expanding AI education to students from physical sciences—rather than data science programs targeting those with computer sciences backgrounds.

Faculty will be drawn from across the School of Physical Sciences, which has AI practitioners across many departments. The courses for this program are all new to the School, and faculty will teach on overload.

The program's cost is relatively high, beginning at $47,800 in the first year, ending at $57,000 in year five, with a proposed 4.7% annual increase afterwards. Market research was conducted and prospective students indicated that the price point was acceptable to them. The job market for work requiring both data and physical science is strong and projected to grow.

Direct costs include computing costs for student equipment, a Program Director, and 15 TA-quarters per academic year. Faculty compensation, staff salaries, benefits, TA and Reader stipends and benefits make up the bulk of the costs for the program. Return to aid is calculated in direct costs, projected to be $100,000 in years 1 and 2, rising to $342,000 by year five. The revenue will support computational infrastructure in the physical sciences. In addition, TAships will support doctoral students in the four departments of the School of Physical Sciences. Indirect costs are the campus standard 38.4%

A diverse student body is a stated aim of the program's proposers. They plan to recruit from events targeting diverse STEM students, and the School has training for recruiting underrepresented students. The first year of the program, current UC Irvine undergraduates will be targeted and fellowships will be set aside for meritorious students. Because the program does not target computer science students, it will not compete for the same students as existing data science or computer science programs.

Committee members noted the unanimous support the proposal received from reviewers. The subject matter is timely, in demand, and within the capacity of the faculty of the School to teach. UCPB endorses the proposal.

Sincerely,

Tim Groeling
Chair

cc: UCPB

Name and Location of Program: **Master of Applied Artificial
Intelligence for Science, UC Irvine**

Lead reviewer(s): Terry Gaasterland

Academic justification:

This self-supporting MS program aims to equip students with industry-
relevant skills in artificial intelligence (AI) and data science, specifically
tailored for applications in the physical sciences. It addresses the gaps left by
traditional data science programs, which typically cater to students with
computer science or engineering backgrounds.

Requirements: 40 units total (9 4-unit courses and 2 2-unit) plus a capstone
project, all completed in 3 quarters.

Offered in the School of Physical Sciences, the program will fill a hole by
providing the training needed for non-CS scientists to gain skills and
proficiency in AI and DS.

The School of Physical Sciences has AI practitioners across multiple
departments. They will participate as faculty in this new MS program. The
program will leverage Irvine's highly ranked Data Science masters degree.
All courses are new. Faculty will teach on an overload basis.

Planning and Budget overview:

1. Proposed initial tuition and any rate of increase:
$47,800 Y1; $49,900 Y2; $52.2K Y3; $52.5K Y4; $57K Y5.

**Not a linear rate increase, but the text references 4.5% escalation going
forward.**

2. Target enrollments for years 1-3:

40	40	60

60 and 60 in Years 4 and 5

3. Projected net revenues for years 1-3:

$12,370	$30,205	$431,530

$457,864 and $484,633 in Years 4 and 5

4. Proposed indirect cost rate (IDC):

Calculated from revenue/expense tables, IDC rate is 36% in Years 1 and 2; 33% Year 3+. On page 223, budget, ICD rate is given as 39.4%.

<u>Detailed areas of review</u>:

5. How was the proposed IDC rate determined? Does the proposed rate appear to cover all indirect costs (facilities, IT, etc.)? What are the space needs of the program?

Direct costs include computing costs for each student to cover an equipped laptop and high-performance computing cycles; also, a Program Director receiving 1/9 AY salary and standard costs; 15 TA-quarters per academic year.

The bulk of direct costs include Faculty Compensation, Staff Salaries, associated benefits, TA and Reader stipends and benefits, supplies. In years 1 and 2, marketing and course development will be startup costs.

Return to aid is also included in direct costs with $100K/year in years 1 and 2, $313K, $327K, $342K in years 3-5.

Total direct costs for years 1-5 = $1.6M $1.4M $1.9M $2.0M $2.1M

Indirect Cost Rates are campus standards (39.4%) applied to direct costs.

6. What are the proposed uses of net revenues? How will they supplement [enhance] state-funded programs? Are there other ways that the program, if successful, will benefit the UC mission (e.g., filling a need not covered by state-supported programs)?

Uses: The net revenues will ensure that computational infrastructure to support ML/AI applied to physical sciences areas exists, is maintained, and is well used by trained practitioners.

Other benefits: TA-ships for 15 TA quarters each year will help support PhD students in the four Physical Sciences departments.

7. How are any potential negative impacts on state-funded programs and the research mission of the UC mitigated?

Impacts on state-funded programs were minimal because faculty will teach on overload and classrooms will be spaces controlled by the School of Physical Sciences with budget to rent additional classrooms as needed.

TAs will be drawn from all four Physical Sciences departments, which have over 500 PhD students collectively. The TA support will encourage PhD programs to grow and will be an important source of support and teaching experience.

8. Describe disposition and compensation of **faculty** serving the program. What is the proposed ratio of UC Senate faculty to non-UC adjunct faculty? For the former category, differentiate between ladder rank and P/LSOE. How will UC Senate faculty be compensated? On-load (i.e., course buyout), overload, or some combination thereof?

The program faculty will be nearly all Senate faculty teaching voluntarily on overload. Instructors are anticipated to be needed only for the 2-unit seminars, if at all.

In steady state, the program will support 15 TA quarters. These TAs will assist faculty with grading and managing the courses.

9. Describe how the program will ensure accessibility and encourage diversity. Note: these concerns may be addressed through return-to-aid used for need-based fellowships, although programs may address accessibility and diversity in a variety of ways and UCPB does not set a standard return-to-aid percentage.

The program will make fellowships available to meritorious, diverse students, managed using standards set by the UC Irvine Graduate Division Diversity Recruitment Fellowships. Strong diversity plan and goals with metrics to measure outcomes. Retention rate and graduate rate in 1 or 2 years will be a primary metric.

10. Describe the market analysis used to justify demand and price point for the proposed program. Will the program compete with others in the system? What are projected percentages of California resident, domestic non-resident, and international students in the program?

To recruit students, the first years will rely on strategic recruitment from UC Irvine's diverse undergraduate population and from local industry. Admissions will be holistic with a checkpoint to see if any applicants who may contribute to diversity deserve a second look. Admitted students must have a math, science or engineering degree at the undergraduate level.

The program will focus on providing computational ML/AI skills to students who are not computer scientists. Thus, it will not compete with existing data science or computer science degrees.

11. Describe relevant consultation and assessment from lower levels of review,

external assessments of the proposal, and the like.

Assessed at UC Irvine by all appropriate Academic Senate committees. Feedback was given after a first review. Concerns revolved around faculty time, overload teaching. Concerns were addressed in the revision sufficiently to garner unanimous approval.

All four Physical Sciences departments voted with the vast majority of faculty voting YES to establish the program.

12. Any other planning and budget concerns?
       None.

13. Any academic-quality or related concerns to flag for CCGA?
       None.

14. Are there specific areas of concern that the mandated review after the third year of operation ought to capture?
       None.

Conclusions and recommendation:

The proposed program has been through two rounds of review within Irvine and received unanimous endorsement after the 2nd revision.

The steady state indirect cost rate of 33% is reasonable, with 67% of tuition going to support the program, 23% to the School, and 9% to the campus.

The subject area is timely and in high demand. Students will pay just under $50K tuition for one year and transform their skills and abilities through mastery of data science, AI, and machine learning technologies and their application to their scientific field.

UC Irvine has strong ML/AI practitioners in the School of Physical Sciences who are complemented by a top tier data science graduate program offered in Computer and Information Science and Engineering. The two programs target different student audiences and thus are not expected to compete.

The program seeks 60 students per year in steady state with 40 students in each of Year 1 and Year 2.

No concerns.