

2017 AIM Photonics Academy Call for Proposals

This Call for Proposals is extended to AIM Photonics members that seek to secure federal funding in 2017 on a matched basis to implement tactical projects targeting AIM Photonics Education, Workforce Development and Roadmap goals. These high level goals include (1) the provision of a venue for US cooperative development of advanced integrated photonics manufacturing workforce solutions; (2) catalyzing the maturation and stratification of the integrated photonics ecosystem; and (3) the provision of world-leading photonic integration technology access/on-ramps to US industry, including the SME and entrepreneurial sectors, as well as the US government and academic communities.

Proposers may include enterprises that are not currently members if they bring critical competence or clearly identified value not present within the current member community. However, in order to receive federal funding to co-develop solutions outside of simple service agreements, such enterprises will be expected to join AIM Photonics at a Tiered membership level with an explicitly stated strategy for achieving project matching contributions. *

AIM Photonics Academy provides the unified knowledge, technology, and workforce interface for AIM Photonics. The AIM Academy customer base includes the membership of all Tiers of AIM Photonics Institute and companies and employees in the electronics and photonics industries and application spaces where integrated photonics technology plays a critical role. The Academy projects must exhibit Customer Focus, Best Practice Execution and Compelling Content. The Education Mission is to be the industry source for technology dissemination and skill certification. The Workforce Development Mission is to provide a capable workforce and productive career paths at all levels of the integrated photonics manufacturing supply chain. The Technology Roadmap Mission is to enable cost reduction and manufacturing scale-up by identifying markets, timelines, technology roadblocks and potential solutions for Big M Manufacturing supply chain alignment.

Proposed projects should be affiliated with one of the three AIM Academy Functional Directorates: Education, Workforce Development, Roadmap, and project content on the AIM Manufacturing Innovation Centers of Excellence (MCEs) and Key Technology Manufacturing Areas (KTMAAs).

Projects are nominally one year in duration. Proposals must be concise, and include milestones, deliverables, and success criteria. While continuations may be both possible and suitable for multi-year endeavors, clear milestones must be included to gauge progress during a one-year funding timeframe. These requirements will be captured in a template with key information blocks and page limits that will be provided following White Paper submission. Proposals will be scored by the AIM Photonics Academy Advisory Council and independently reviewed by Technical Review Board (TRB), and by the Leadership Council (LC), according to the scoring criteria that are provided in this call.

Proposal Submission is a two-stage process: i) a Letter of Intent (due September 19) containing a one-page White Paper that initiates a planning activity with an AIM Academy Directorate; and ii) a Full Proposal (due October 24). Members of AIM Institute may propose customized programs for company, industry or university internships, short courses, workshops and skill certification. In specific cases, up to 20% of membership fees may qualify for cost matching. Project content and delivery are critical proposal success factors. Priorities and schedules for submission and decision are described in the following.

Education AIM Academy Education prepares students, technicians, engineers, and researchers to build productive careers in the emerging Integrated Photonics Industry, by systematically creating and disseminating scalable, stackable effective educational modules, courses and programs, comprised of state-of-the-art content and pedagogical best practices. White Paper should include: Topic of Course or Module (see Portfolio Priorities below); Level of Difficulty (novice, intermediate or advanced) and Pre-Requisite Knowledge (e.g., basic knowledge of photonics, advanced physics, etc.); Target Audience (e.g., individuals working in a particular industry, graduate students in a specific field); Student Learning Outcomes (at the end of the course/module, students will be able to do or know ...); Content Description (A paragraph describing topics covered); Examples of Teaching Methods (active learning lectures, demonstrations, simulations, experiments, design-build projects).

Workforce Development AIM Academy Workforce Development provides a capable workforce and productive career paths at all levels of the integrated photonics manufacturing supply chain. Practice opportunities in industry and academia for engagement and credentialing are priorities. Proposals that involve local communities and SMEs in Integrated Photonics industrial development are of particular interest to partnerships at the State level. AIM Industry Members should propose internship, apprenticeship and credentialing projects here.

Technology Roadmap The AIM Technology Roadmap enables cost reduction and manufacturing scale-up by identifying markets, timelines, technology roadblocks and potential solutions for Big M Manufacturing supply chain alignment. As a gateway for AIM Member recruiting, projects that i) determine market and system requirements or ii) establish limited term (e.g., 18 months) consortia to develop prototypes with near term manufacturing targets (e.g., SM AOCs), are encouraged.

AIM Design Center The AIM Design Center provides the gateway for MPW submissions on the AIM Integrated Photonics Platform. AIM Photonics Academy will host a portal at the Design Center for education, training and collaborative Roadmap projects. The Design Center offers a special opportunity for industrial engagement in building a community of integrated photonics designers and in tapping into AIM creativity with Design Challenges. The MPW Design Reticle is a 50mm² area that will be partitioned for education and training projects. Industrial partners are encouraged to sponsor Design Reticles for i) education/training to develop the AIM design cohort and ii) functionality focused Design Challenges. The rules of engagement will be determined during the post white paper proposal development period. These projects will align with growing engagement in the AIM MPW services by NSF and other partner organizations. A significant interest is anticipated for these projects, so please submit at the White Paper stage to secure participation.

AIM Practice Facilities AIM Photonics will host several practice facilities for engagement of students and companies in integrated photonics manufacturing technology. The missions of these facilities range from MS-level project-based teaching of processing and prototyping at the AIM-MIT Education Factory to industry engagement in manufacturing equipment qualification and employee certification at the AIM Photonics SUNY-Poly foundry and at joint AIM-MEP design, test, and prototyping facilities. Proposal topics are expected to include: i) equipment donations, ii) joint tool development to meet manufacturing requirements, iii) technician certification for specific skill sets, and iv) development of the employee/student cohort and associated challenge projects in integrated photonics manufacturing.

2016 AIM Academy Submission and Decision Schedule

- **Letter of Intent with White Paper:** triggers support of AIM Academy staff – before end of day, September 19, 2016
 - one page text, budget estimate, and CVs of key personnel
 - please email submissions to John Kosek at jkosek@mit.edu.
- **Full Proposal** submission: October 24, 2016
- **AIM Academy Council Review:** November 2, 2016
- **AIM Academy Proposal Portfolio** submission to AIM Leadership Council: December 1, 2016
- **Funding decisions by Leadership Council:** December 8, 2016

2017 AIM Academy Portfolio Priorities

- Education: Electronic-Photonic Test (BS-level), AIM Design Center integration (Engineer/PhD-level)
- Workforce Development: Internships, Certification, Professional Skills
- Roadmap: Manufacturing supply chain alignment, joint assessment/prototype projects which align MCE/KTMAs with technology and market vectors
- Assessment: Workforce Needs studies
- Industry/Academic: Internships, Scholarships, Apprenticeships, Practice Facilities

*** AIM Membership Notice** AIM Photonics does not desire to exclude committed member companies from leading, or participating in, proposals. As a result, the AIM Academy Council will evaluate, and potentially recommend, proposals in this first stage of submission that include companies who have not yet been able to sign the AIM Photonics Membership Agreement. Companies considering participation should understand that the first stage of proposal submission is not a contractual commitment. A first-stage proposal must first get approval by the AIM Photonics Leadership Council (LC) for the next step, which includes full detailed project planning and budgeting. If such a down-selected, detailed proposal is then subsequently approved for funding by the LC in December, a comprehensive Project Award Agreement will be generated and signed in January of 2017, which then becomes a contractual agreement. Companies would be required to become members of AIM Photonics prior to, or in conjunction with the execution of a Project Award Agreement.

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AIM Photonics Academy Advisory Council Scoring Criteria

Scoring Criteria Guide

1. **Significance:** The proposal matches tactical goals and missions of AIM Photonics and AIM Academy (Education, Workforce Development and Roadmap) to define contribution and its significance.

AIM Mission: Seek to advance integrated photonic circuit manufacturing technology development while simultaneously providing access to state-of-the-art fabrication, packaging, and testing capabilities for small-to-medium enterprises, academia and the government; create an adaptive integrated photonic circuit workforce capable of meeting industry needs and thus further increasing domestic competitiveness; and meet participating commercial, defense and civilian agency needs in this burgeoning technology area.

AIM Academy Mission: Provide the unified knowledge, technology, and workforce interface for AIM Photonics

2. **Relevancy:** The proposed project is responsive to the priorities of the AIM members and broadly affiliated with the content on the MCEs and KTMA. The proposal content should address the portfolio priorities and critical needs of Workforce Development, Education or Technology Roadmap.

AIM Member priorities: i) Short Courses; ii) Graduate Courses in Integrated Photonics Manufacturing; iii) Practice Facilities; iv) Design Center integration; v) Workforce Needs Assessment studies; vi) Workforce Internship, Apprenticeship and/or professional skills; viii) Roadmap manufacturing supply chain and joint projects which align MCE/KTMAs with technology and market vectors

3. **Impact:** the proposed project should address development of innovative methodologies and practices for advanced integrated photonics manufacturing. The proposal also needs to clearly define outcomes and to specify how to make an impact on AIM community, which may include specific engagement with solution in respective stratified ecosystem segment.
4. **Implementation:** the proposed project should include required competency and infrastructure for efficient execution. The deliverable milestones/checkpoints are clearly defined and realistic. The budget is appropriate to proposed activity, team personnel, resources, and deliverables.

Timeframe: Project can be done in the time allotted, such as Year 1, or by the end of AIM Academy

Target audience: Project is aligned with at least one of our target audiences: community college, undergrad, grad, industry, gr. 7-12

5. **Sustainability:** The proposed project includes a stable and sustainable model to support and contribute to AIM sustainability. Project deliverable is open access to AIM partners and the integrated photonics community.

Scores in each category are used to facilitate discussion and prioritization of proposal impact, including delivery and technical strengths and weaknesses, and suitability of goals and the project team.

White Papers are due Monday, September 19th at 12:00 midnight EDT; the submission email address is John Kosek at jkosek@mit.edu.