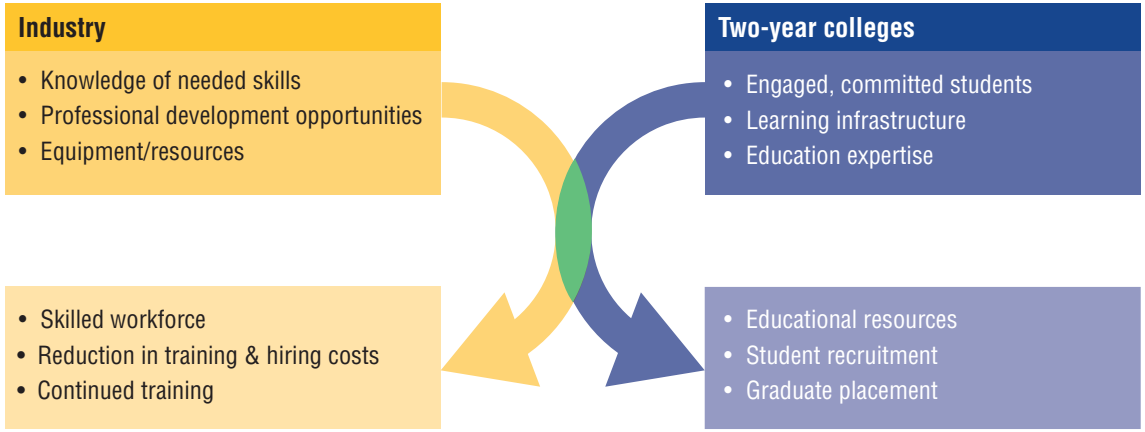
ROADMAPS FOR LINKING INDUSTRY AND TWO-YEAR COLLEGES

ACS Chemistry for Life®

Numerous recent reports have highlighted shortfalls employers face in hiring skilled technical workers.[1] These challenges can be addressed, in part, by partnering with the two-year colleges that are educating the workforce.

By collaborating with local two-year colleges, employers can help ensure that program graduates meet the employability criteria they require. Two-year colleges have excellent educators, infrastructure to support learning, and students eager to prepare for the workforce. When employers supplement this education with the skills expected of new employees, opportunities to develop these skills, and needed equipment and resources, the result is a highly skilled and committed workforce that can start work with minimal additional training.



The attached materials outline the steps employers and two-year colleges can take to develop robust, mutually beneficial partnerships.

About the roadmap

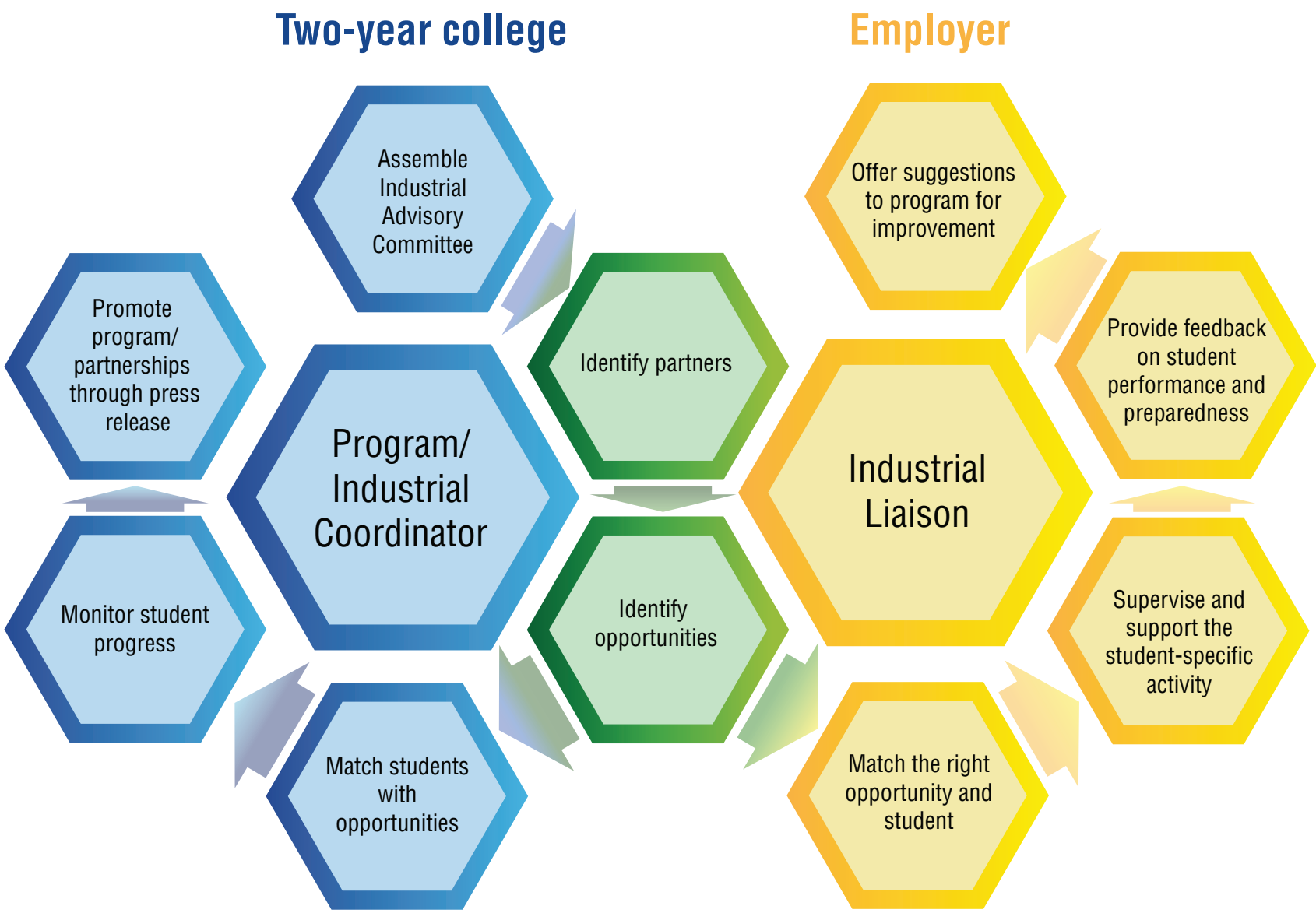
The enclosed roadmap starts with an overview of the steps employers and two-year colleges can take to form a partnership. The overview is followed by a description of the two-year college and employer components. Finally, a more detailed description lays out the steps required to ensure that the partnership is mutually beneficial and fills the employment pipeline with talented, skilled employees.

About the task force

The roadmaps were the result of two complementary American Chemical Society (ACS) task forces comprised of industry and two-year college representatives. Both task forces were commissioned by 2015 ACS President Diane Grob Schmidt. In 2015, the Industry/Two-Year College Task Force was charged to identify ways in which ACS could support the workforce needs of the chemical industry at the two-year college level. In 2016, a subsequent Presidential Task Force developed the roadmaps as part of a plan for implementing the recommendations of the first task force.

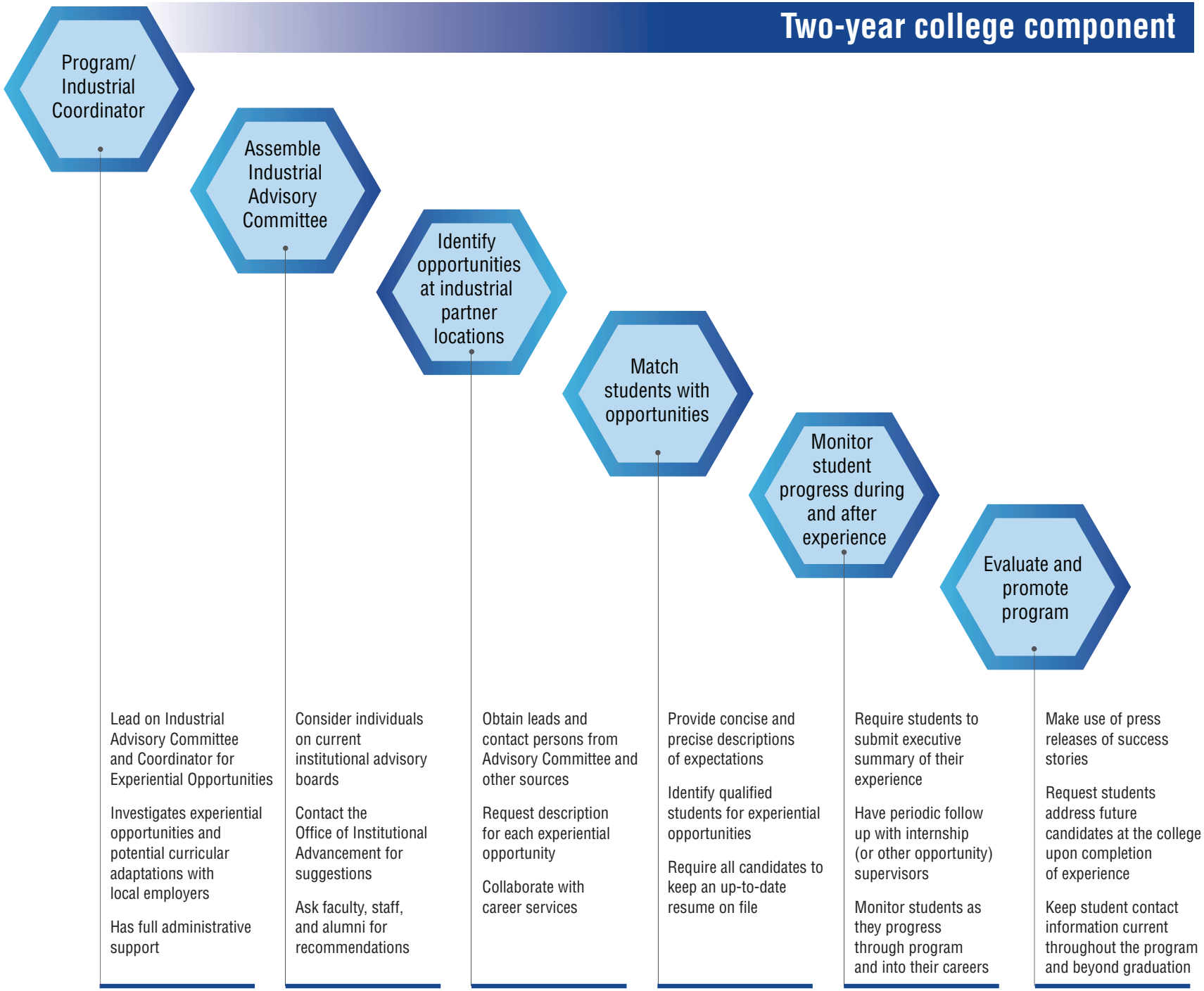
[1] 1. Morrison, T.; Maciejewski, B.; Giffi, C.; DeRocco, E.S.; McNelly, J.; Carrick, G. Boiling Point? The Skills Gap in U.S. Manufacturing. Deloitte Development LLC: New York, NY, 2011.
2. Little, J.; Marshall, B.; Reilly, M.; Robbins, J.; Walsh, T.; Carrick, G. Out of Inventory: Skills Shortage Threatens Growth for US Manufacturing. Accenture: New York, NY, 2014.
3. Accelerating U.S. Advanced Manufacturing; President's Council of Advisors on Science and Technology: Washington, DC, 2014.
4. Bureau of Labor Statistics, http://www.bls.gov/ooh/life-physical-and-social-science/chemical-technicians.htm (accessed Feb. 2016).

Overview



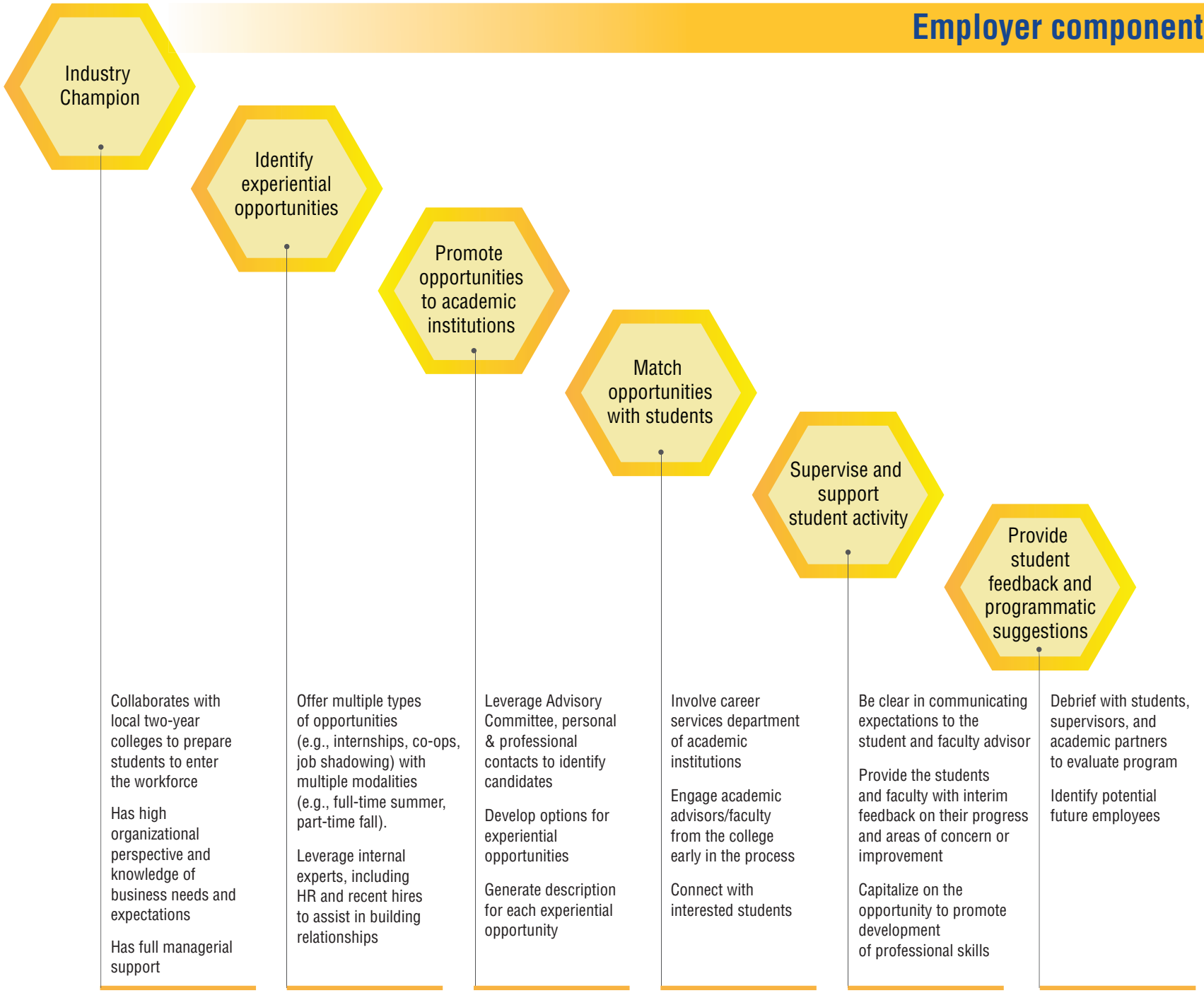
Industry/Two-Year College Partnership Roadmap

Two-year college component



Industry/Two-Year College Partnership Roadmap

Employer component



Industry/Two-Year College Partnership Roadmap

Industry & Two-Year College Partnership Roadmap

PROCESS DESCRIPTION

The following details the steps employers and two-year colleges can take to establish and maintain mutually beneficial partnerships.

1) Develop a program or identify a champion within your organization

Academia

- Identify a faculty member or administrator to work with local industry and build partnerships
  - **Considerations**:
    - Familiarity with student needs, chemistry curriculum, available resources
    - Connections among departments
    - Position to effect any needed changes
- Coordinate with career services departments in development of program
- Consider developing an industry-responsive chemistry-based technology program (if institution does not currently have one)
- Ideal to have personnel overlap between Industrial Advisory Committee and Internship Programs

Industry

- Identify an employee to work with local two-year colleges and build partnerships
  - **Considerations**:
    - Familiarity with organizational needs regarding skilled employees
    - Originate from any department with a vested interest in skilled chemistry professionals, such as R&D or QC
    - Connections among departments
- Position to effect any needed changes
- Coordinate with Human Resources and Public Relations departments

Both

- Ensure champion has adequate support; administrative/managerial support is essential.
- Provide release time, reduced workload, or other mechanism to ensure partnership work is prioritized

2) Identify external organizations and individuals to partner with

Academia

- Leverage career services, alumni, personal, and advisory board connections
- Contact Chamber of Commerce to identify potential industrial partners. Potential partners include:
  - Analytical & testing organizations
  - Chemical and pharmaceutical manufacturers
  - Government laboratories
  - Start-up companies
- Review opportunities at Get Experience (getexperience.acs.org) to identify employers interested in providing developmental opportunities for students

Industry

- Leverage internal experts, including HR and recent hires, to assist in the building of relationships
- Consider working with local alumni and others who may have intern or co-op experiences in their own careers
- Reach out to local two-year college chemistry and chemistry-based technology faculty
- Consider posting opportunities on getexperience.acs.org

Both

- Make connections through ACS local section and regional meetings and newsletters
- Develop a call report for each contact and follow up regularly

Industry & Two-Year College Partnership Roadmap (*continued*)

3) Identify unique resources and overlapping goals

Academia	Industry

• Available resources may include:
  • Educational equipment, space, and other infrastructure
  • Educators who are experts in teaching and training
  • Courses that may align with industry needs
  • Capacity to develop new courses
• Goals may include:
  • Experiential opportunities for students
  • Curriculum that prepares students to enter the workforce
	• Available resources may include:
	  • Necessary skills and knowledge to incorporate into curriculum
	  • Experiential opportunities, such as internships, co-ops, job-shadowing, etc.
	  • Second-hand equipment or in-kind donations
	  • Guest lecturers and lab tours
	• Goals may include:
	  • Graduates with the skills needed to enter the workforce
	  • Reduced training costs for new and incumbent employees

Both
- Be proactive in identifying available resources
- Actively listen to identify overlapping goals and shared needs

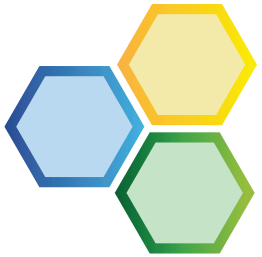
4) Match the right students with the right opportunities

Academia	Industry

• Work with industrial contact to understand opportunities and expectations
  • Obtain a complete job description with expectations for each co-curricular experience
  • Establish needs with regard to number of candidates and their qualifications
• Require interested students to keep active resumes with the school's career services department
• Faculty can identify potentially viable candidates for co-curricular experiences
  • Consider scheduling (e.g., summer only vs. full-year)
  • Monitor students as they register and throughout the term
• Send **only** qualified student resumes (to avoid over-burdening partners with candidates)
	• Consider a variety of summer, part-time, and full-time opportunities [summer preferred]
	• Consider R&D, analytical, manufacturing, marketing/market research (or other type of non-lab support), regulatory
	• Make sure that internship descriptions and program summaries are current and interesting
	• Project needs over several years to assist with program planning
	• Engage academic advisors early in the process

Both
- Balance industry need for flexibility and agility with the time needed to educate the future workforce
- Be creative in developing opportunities and responding to partners' needs

Industry & Two-Year College Partnership Roadmap (*continued*)



5) Supervise and support the student-specific activity

Academia	Industry
• Ensure students are prepared to fully engage in co-curricular activity • Meet with students during co-curricular activity to monitor progress and provide support	• Capitalize on the opportunity to teach the important professional skills (e.g. communication, teamwork, problem-solving) and their significance in working in industry • Provide the students and faculty with interim feedback on their progress and areas of concern or improvement
Both • Clearly communicate expectations to students in advance of co-curricular activity • Provide frequent feedback and support as needed	

6) Follow-up and maintain good relationships

Academia	Industry

• Require students to
  • Write executive summary of experience
  • Discuss experience with other students considering similar opportunities (e.g., at a recruiting event, workshop, etc.)
• Review experience with student to identify any changes that could better support future participants.
	• Maintain contact with students that appear well-suited for full-time employment
	• Attend student presentation, if applicable

Both • Review experience; identify what worked well for each partner and what could be improved • Work with internal PR departments to promote program and activities through press releases and social media • Continue to communicate frequently