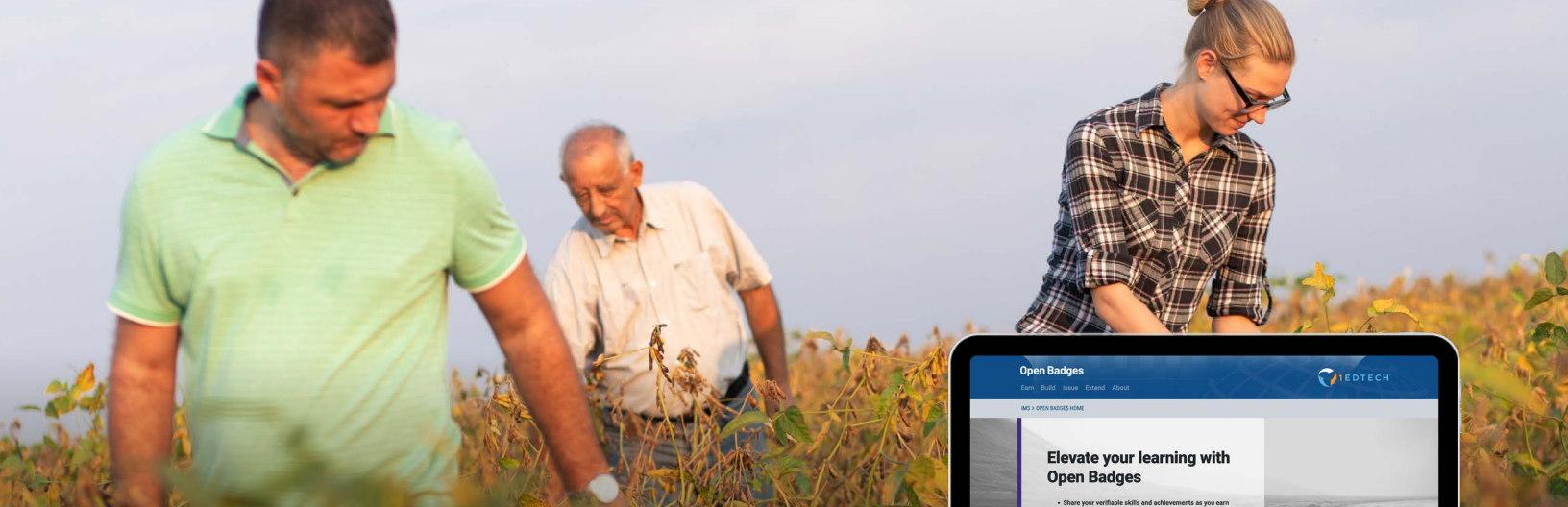


Microcredentials in Extension: A Framework for Land-grant Universities to Deliver Workforce-Ready Skill Credentials Through Extension Programming

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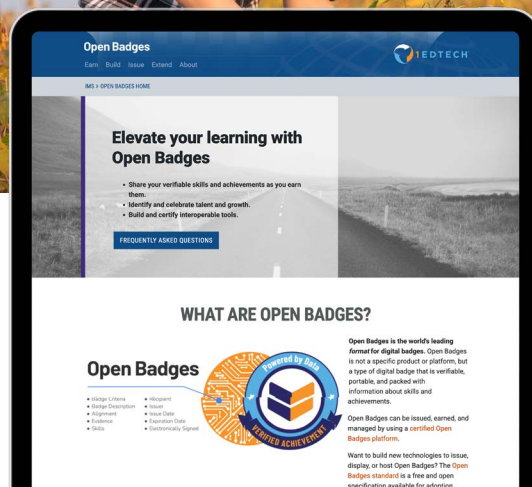


Land-grant universities have provided practical education to agricultural producers, families and youth for over a century in the United States. While original Extension programs were focused on rural audiences, current programming addresses both rural and urban stakeholder educational needs.

Through their Cooperative Extension Services, land-grant institutions deliver practical education programs that can be used immediately to people where they are. A new and rapidly expanding educational format, the microcredential, offers Extension a new venue to provide educational delivery to better serve adult learners beyond Extension's traditional audience. This publication explains what microcredentials are, how they work, and how Cooperative Extension programs can strategically adopt them as part of their educational programming.

WHAT IS A MICROCREDENTIAL?

Microcredential educational programs are short, highly focused learning experiences designed to verify that a learner has acquired a specific, demonstrable skill or competency. Microcredentials enable individuals to quickly gain skills that are in high demand in the labor market (Ahsan et al., 2023). Employers have shown a growing interest in, and acceptance of, using microcredentials (Varadarajan et al., 2023; Brown et al., 2021), and one recent survey reports that 68 percent of employers preferred hiring recent college graduates with microcredentials (Finley, A. 2023). Upon successful completion of a microcredential, learners receive a digital badge. Digital badges are a portable, verifiable credential that can be shared with employers, academic institutions and professional networks. Unlike traditional university degrees that provide a broad academic foundation, microcredentials target a specific skill. Microcredentials provide relevant training that bridges the gap between formal and non-formal learning (Wenjing et al., 2026). Market-facing microcredential programs differ from traditional Extension programming in that they target individuals in the professional workforce, rather than self-employed farmers. These individuals could be upskilled within the agricultural and agribusiness workforces, as well as individuals in other sectors that land-grant Extension programs have expertise in, such as biogas production, ethanol production, construction management, forestry, nutrition or youth development, for example.



Typical Features of a Microcredential Program

- **Focus:** Microcredentials follow a competency-based model, emphasizing whether the student can demonstrate a specific skill rather than how many hours were spent in a classroom.
- **Length:** Skill-based microcredential programs typically require between five and 25 hours to complete. They cover a specific, well-defined topic and provide a digital badge upon completion, with the goal of delivering immediate workplace application.
- **Format:** Programs are typically provided as asynchronous, online, self-paced training, which is ideal for working adults and individuals with variable schedules.
- **Digital Badges:** Digital badges are created by universities using platforms such as Open Badges. The badge is a digital file cryptographically signed by the issuing institution, making it tamper-evident and trustworthy. Because these badges align with open industry standards, students can export them to third-party digital wallets, CVs and social platforms like LinkedIn, where they are recognized by employers (Gibson et al., 2013).
- **Verification:** Digital badges contain verifiable metadata that proves the holder completed training on a specific skill. Most current digital badges follow the Open Badges Standard, ensuring portability and resistance to fraud or counterfeiting (1EdTech Consortium, 2026).
- **Stackability:** Multiple single-topic microcredentials can be combined or “stacked” into a higher-level qualification or certificate, allowing learners to build progressively toward broader skill sets (Wheelahan & Moodie, 2021).
- **Standardization:** Microcredentials should be standardized using the credentialing system in place at the issuing land-grant university, ensuring quality control and institutional accountability.

EXTENSION MICROCREDENTIALS

The U.S. land-grant Extension Service is designed to translate university research into practical and accessible education for people outside of the university classroom. Microcredentials and their associated digital badges offer a vehicle for universities to incorporate competency-based learning opportunities that are flexible, stackable, and allow employees to learn new skills quickly (Galindo & Gauthier, 2025). Extension educational programming offers universities the opportunity to quickly adopt microcredentials into their university offerings without reworking for-credit curriculums (Roberts et al., 2025; Varadarajan et al., 2023).

Microcredentials align naturally with the Extension mission in several key ways:

Serving Non-Traditional Learners: Extension's core audience of farmers, agricultural workers, small business owners and adult learners are not seeking formal degrees. They typically cannot afford the time or expense of formal degree programs. Microcredentials deliver targeted, need-based learning for this clientele in a short time.

Subject-Matter Alignment: Extension programs are already organized around specific subject-matter areas (e.g., crop production, livestock management, financial literacy, food safety). Each of these areas represents a natural home for a focused microcredential.

Expertise as a Resource: Extension specialists and agents are recognized subject-matter experts and trusted community educators. They are ideally positioned to develop, deliver and validate the competency-based learning that microcredentials require to a new audience.

Revenue Generation: Microcredential programs are fee-based programs that provide market value to the individual acquiring the associated digital badge. While Extension programming has transitioned from free to limited fee-based programming, microcredentials typically have cost similar to credit-based university courses. As such, microcredentials provide the opportunity for Extension programs to generate more significant amounts of revenue compared to traditional Extension programming.

Demonstrable Value for Learners: By issuing verifiable digital badges, Extension can provide learners with a permanent, shareable record of their professional development. This strengthens the value proposition of Extension educational training by helping learners advance in their careers.

Rapid Response to Emerging Needs: As industries, regulatory environments and technologies evolve rapidly, microcredentials allow Extension to quickly develop and deploy timely learning content in response to emerging needs much faster than traditional university course development cycles (Moore et al., 2025).

A FRAMEWORK FOR IMPLEMENTING MICROCREDENTIALS IN EXTENSION

Successfully creating a new Extension microcredential program can be broken down into the following four steps: needs assessment, curriculum development, technology infrastructure and delivery and evaluation.

Step 1: Conduct a Needs Assessment

The first step in developing any Extension education program is understanding the educational needs of the target audience. A microcredential program should address a specific skill gap that when addressed has value to an employer. Suggestions to confirm the planned microcredential topic is relevant to the current market include:

- Consulting with stakeholders, topic-specific professionals and economic development agencies to identify high-priority skill gaps.
- Reviewing labor market data and state workforce development priorities to identify in-demand skills that align with Extension's subject-matter expertise.
- Assessing existing Extension programming to identify courses or workshops that could be adapted into stackable microcredential modules. Note that Extension teams may need to be identified in order to provide the subject matter depth to offer a set of stackable microcredential modules.
- Engaging with employers and industry partners to ensure that proposed microcredentials align with real-world hiring and professional development needs.
- Target training topics to those requested by employers that address ongoing and emerging competency gaps among their employees (Roberts, et al., 2025).

Step 2: Design the Curriculum and Assessment

A high-quality microcredential is built around clear and measurable learning outcomes. Curriculum development should follow a competency-based design process suggested to include:

- Define specific, observable competencies that the learner will demonstrate upon completion.
- Develop learning content such as lectures, videos, reading assignments and interactive modules that directly teach the targeted competencies.
- Create performance-based assessments, including skills demonstrations, scenario-based quizzes, project submissions or supervised field applications, that verify competency attainment.
- Ensure content is accessible across devices (mobile-friendly) and meets ADA accessibility standards.
- Pilot test the microcredential with a representative group of target learners before full launch and use feedback to refine the content and assessment tools.

Step 3: Establish Technology Infrastructure

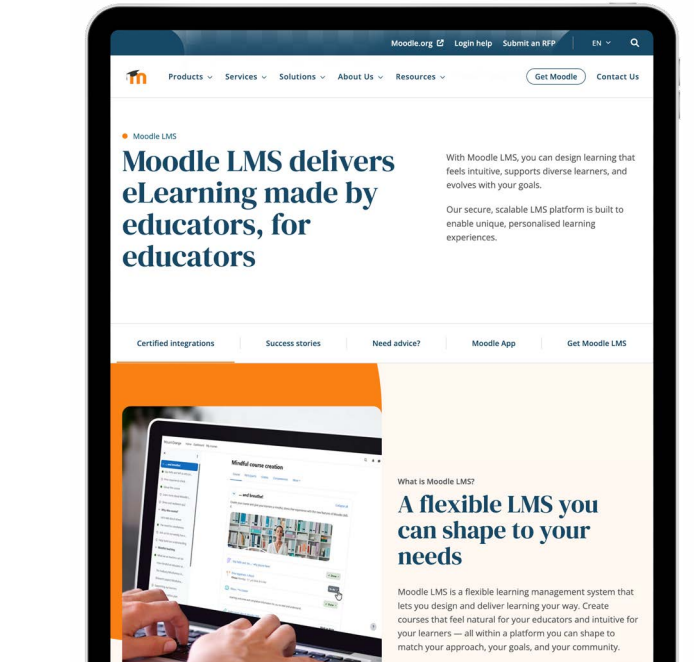
Issuing verifiable digital badges requires a small but important investment in technology platforms. Land-grant university Extension programs should consider the following:

- **Badge Platform:** Select a badge-issuing platform (e.g., Credly, Badgr or Parchment) that complies with the Open Badges Standard (IMS Global) to ensure credentials are portable and verifiable by employers.
- **Learning Management System:** Offer the microcredential through a Learning Management System (LMS) such as Canvas, Moodle or a dedicated Extension online learning portal to provide a consistent learner experience.
- **Institutional Alignment:** Align the credential with the university's existing credentialing governance structure, such as a Microcredential Review Board (MRB), to ensure institutional quality and standardization.
- **Badge Metadata Requirements:** Ensure the digital badge metadata includes the issuing institution, specific competencies validated, the assessment method used, the date of issuance and an expiration date if the skill is one requires periodic renewal.

Step 4: Build Stackable Pathways

An important strength of the microcredential model is its stackability. Extension programs can design individual microcredentials to intentionally build upon one another, creating clear learning pathways for participants. For example:

- An engineering technician might begin with a microcredential in the *Biology and Process of Anaerobic Digestion*, then stack additional microcredentials in *Feedstock Management*, *Biogas Digester Technology*, *Biogas Upgrading and Regulations and Safety* to earn a broader qualification in *Anaerobic Digestion Plant Operations*.
- An agricultural food processing worker might earn individual credentials in *Food Safety Basics*, *Food Microbiology*, *HACCP Fundamentals*, and *GMPs and Facility Sanitation Standards* that stack into a *Food Safety Technician* certificate recognized by employers.
- Extension agents could also use stackable microcredentials as a structured pathway for professional development. This would allow agents to build recognized expertise in priority program areas over time. Unlike university specific in-service training, digitally badged microcredentials could be recognized across the land-grant university system at the regional or national level.



Step 5: Deliver and Evaluate

After delivering a microcredential education program, it should be evaluated using the qualitative and quantitative methods used to evaluate other Extension programs. In addition to traditional Extension evaluation, quizzes, exams, and demonstrations are required to confirm the student has mastered the skill. These confirmations of student competence can also be used to confirm the impact of microcredential educational programs on student knowledge gained from the program. For example:

- Qualitative Methods examples include interviewing participants either individually or using group inquiries, or observation.
- Quantitative methods could include post-only training surveys, pre- and post-training surveys and delayed follow-up surveys.
- Quizzes, exams or demonstrations of skills. Because an individual completing a microcredential will receive a digital badge that provides confirmation that the individual mastered a certain skill, student demonstrations such as presentations and performance tasks are also valuable evaluation tools.

BENEFITS TO EXTENSION

Microcredentials offer land-grant university Extension programs the opportunity to reach potentially new audiences with skills-based programming. By providing fee-based training focused on specific skills sought by employers, Extension can utilize microcredentials to generate an additional revenue stream. Microcredential fees may be paid by individuals wishing to increase their marketability or by employers who wish to upskill their existing workforce. The development of series of stackable microcredentials provides the opportunity for teams to form within Extension to cover all of the required expertise to offer a complete set of microcredentials in a given program topic. By developing digitally badged professional development training for Extension agents across a region, agents could realize increased benefit from required professional development or in-service training.

SUMMARY

Microcredentials represent a significant and timely opportunity for land-grant university Extension to strengthen its educational impact, better serve adult learners and demonstrate clear, verifiable outcomes to employers. By leveraging the trust, subject-matter expertise and community relationships that Extension has, land-grant universities are uniquely positioned to become leaders in the microcredential movement, especially in agriculture, natural resources, food systems, and rural community development. To be successful, Extension microcredential programs should be competency-based, institutionally standardized, technologically verifiable and responsive to the real-world needs of the communities Extension serves. Extension microcredential programs can be used to reach new audiences while strengthening economies and reinforcing the relevance of the land-grant university Extension mission.

ADDITIONAL RESOURCES

EduTranscript. (2026). Micro-credentials in higher education: A practical guide: edutranscript.com/blog/micro-credentials-in-higher-education.html

This Web Blog by EduTranscript provides an easily understandable overview of what microcredentials are and how they function.

1EdTech Consortium. (2026). Open Badges 3.0 implementation guide: imglobal.org/spec/ob/v3p0/impl/.

The Open Badges 3.0 implementation guide is the technical guide for implementing the Open Badges Standard referenced in this publication and covers badge issuance, metadata requirements, platform selection, and integration with LMS systems such as Canvas and Moodle.

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