SEMINAR BULANAN

Jurusan Sosial Ekonomi Pertanian
Universitas Andalas

SERTIFIKAT

diberikan kepada :

Prof. Dr. Ir. Rudi Febriamansyah, M.Sc

sebagai :

Narasumber

pada kegiatan SEMINAR BULANAN
Jurusan Sosial Ekonomi Pertanian
Universitas Andalas

dengan tema PENDIDIKAN AGRIBISNIS &
PENYULUHAN PERTANIAN DI ERA "AGRIBISNIS 4.0"
Padang, 14 Maret 2018

Ketua Jurusan
Sosial Ekonomi Pertanian

Dr. Ir. Osmet, MSc
NIP.195519191987021001

Dekan Fakultas Pertanian

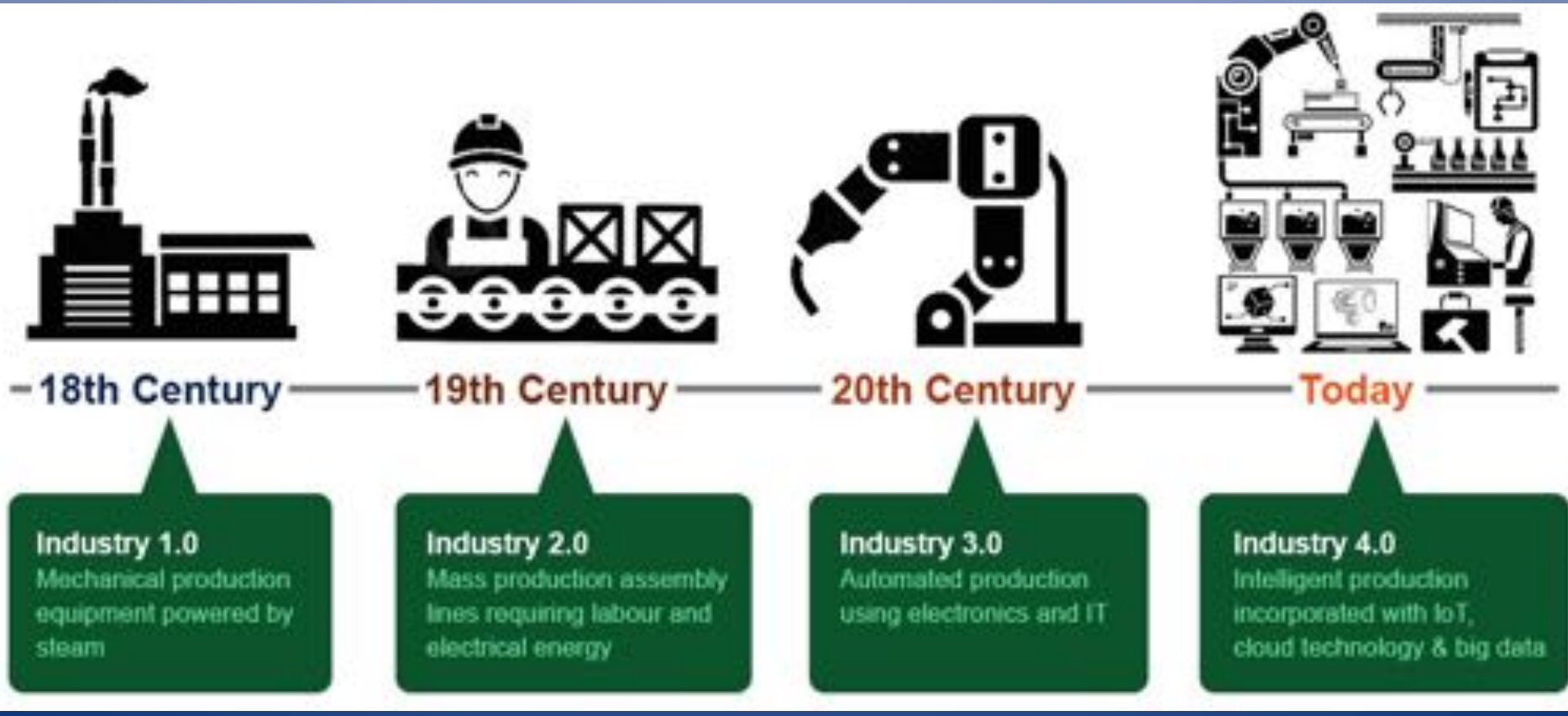
Dr. Ir. Munzir Busniah, MSi
NIP.196406081983031001

PENDIDIKAN AGRIBISNIS DAN PENYULUHAN PERTANIAN DI ERA "AGRICULTURE 4.0"

Rudi Febriamansyah
Guru Besar Ilmu Pembangunan Pedesaan
Universitas Andalas

Dipresentasikan pada SEMINAR BULANAN,
Jurusan Sosek Pertanian, Universitas Andalas,
Padang, 14 Maret 2018

INDUSTRIAL REVOLUTION



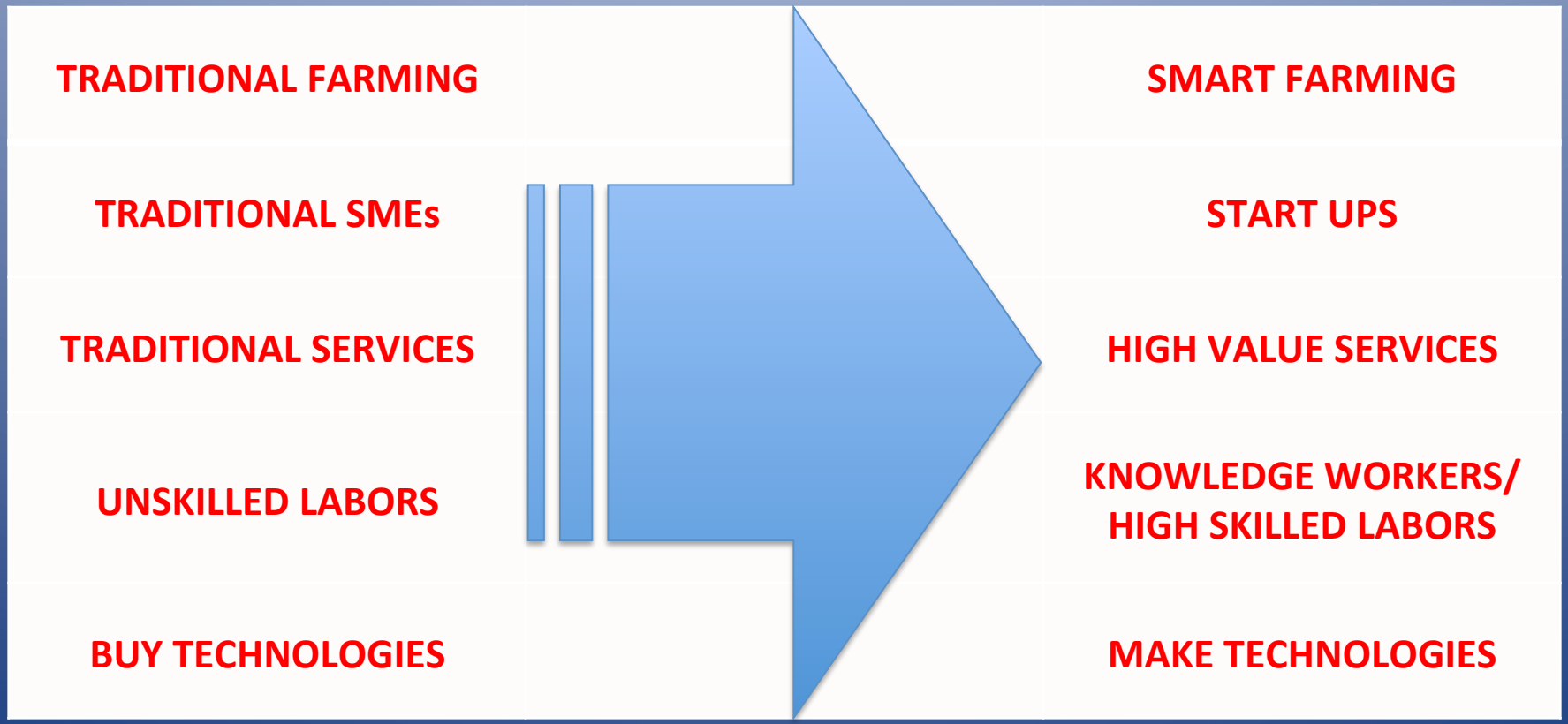
Agriculture 4.0

What is Agriculture 4.0

- In terms of definitions, Agriculture 4.0, in analogy to Industry 4.0, stands for the integrated internal and external networking of farming operations. This means that information in digital form exists for all farm sectors and processes; communication with external partners such as suppliers and end customers is likewise carried out electronically; and data transmission, processing and analysis are (largely) automated. The use of Internet-based portals can facilitate the handling of large volumes of data, as well as networking within the farm and with external partners.
- Agriculture 4.0 paves the way for the next evolution of farming consisting of unmanned operations and autonomous decision systems. Agriculture 5.0 will be based around robotics and (some form of) artificial intelligence.

http://www.cema-agri.org/page/what-agriculture-40

TRANSFORMASI KE “AGRICULTURE 4.0”



Statement Kemristekdikti

- **Disampaikan dalam Rakernas Kemristekdikti, Medan, 16-17 Jan 2018**
- **Indonesia Siap Menyambut Globalisasi Pendidikan dan Revolusi Industri ke-4 (RI 4.0)**
- **Tiga bidang/faktor yang harus dikuasai oleh suatu negara untuk memajukan indeks daya saing bangsa, yaitu**

  (i) Pendidikan Tinggi dan Pelatihan,

  (ii) Ilmu Pengetahuan dan Teknologi (IPTEK) dan Kesiapan Teknologi,

  (iii) Inovasi dan 'Business Sophistication'.

Presentasi Dirjen Belmawa, Intan Ahmad

Tantangan
SDM PEMBANGUNAN
Indonesia Era Revolusi Industri 4.0

(WEF, 2017)

36/137
DAYA SAING INDONESIA

Singapura ke-3
Malaysia ke-23
Thailand ke-32

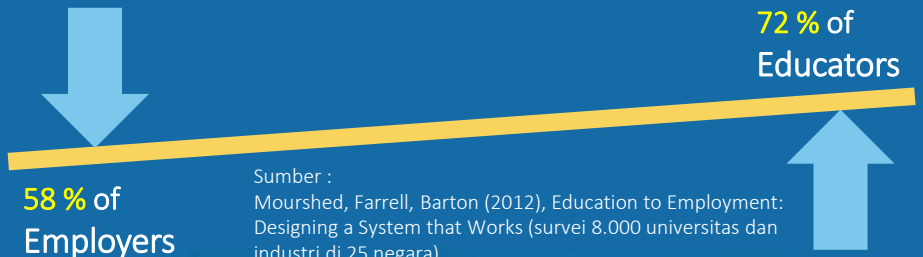
(BPS, Agustus 2017)

8,8% / 618 ribu
PENGANGGURAN SARJANA

Total Pengangguran Terbuka ±7 juta orang dari ±128 juta angkatan kerja

Relevansi **pendidikan dan pekerjaan**, perlu disesuaikan dengan perkembangan era dan IPTEK dengan tetap memberikan perhatian kepada aspek *humanities*

"Employers complaint bahwa para pekerja tidak mempunyai *skills* yang memadai"



Sumber :
Mourshed, Farrell, Barton (2012), Education to Employment: Designing a System that Works (survei 8.000 universitas dan industri di 25 negara).

Pasar kerja membutuhkan kombinasi berbagai *skills* yang berbeda dengan yang selama ini diberikan oleh sistem pendidikan tinggi (Marmolejo, World Bank, 2017).

Proses Pembelajaran Digital dalam Era Revolusi Industri 4.0

Perlunya

LITERASI BARU

Menghadapi Era Revolusi Industri 4.0

Sudah siapkah kita?

Menyiapkan lulusan lebih kompetitif

Agar lulusan bisa kompetitif, kurikukum perlu orientasi baru, sebab adanya Era Revolusi Industri 4.0, tidak hanya cukup **Literasi Lama (membaca, menulis, & matematika)** sebagai modal dasar untuk berkiprah di masyarakat.

Literasi Baru:

(Aoun, MIT, 2017)

Literasi Data

Kemampuan untuk membaca, analisis, dan menggunakan informasi (***Big Data***) di dunia digital.

Literasi Teknologi

Memahami cara kerja mesin, aplikasi teknologi (*Coding, Artificial Intelligence, & Engineering Principles*).

Literasi Manusia

Humanities, Komunikasi, & Desain.

Bagaimana caranya meyakinkan mahasiswa bahwa literasi baru ini akan membuat mereka kompetitif ?

LITERASI MANUSIA

Agar manusia bisa berfungsi dengan baik di lingkungan manusia: *Humanities*, Komunikasi, & Desain.

Universitas perlu mencari metoda untuk mengembangkan kapasitas kognitif mahasiswa: *higher order mental skills,* berpikir kritis & sistemik: amat penting untuk bertahan di era revolusi industri 4.0.

Keterampilan:
1. Kepemimpinan (*leadership*)
2. Bekerja dalam tim (*team work*)

Kelincahan dan kematangan budaya (*Cultural Agility)*:
Mahasiswa dengan berbagai latar belakang mampu bekerja dalam lingkungan yang berbeda (dalam/luar negeri).

Entrepreneurship (termasuk *social entrepreneurship*):
Harus merupakan kapasitas dasar yang dimiliki oleh semua mahasiswa.

Bagaimana mengajarnya?

(Aoun, 2017)

- Studi tematik berbagai disiplin, hubungkan dengan dunia nyata, *project based-learning*.
- Melalui *General Education*, Ekstra-kurikuler.

- Magang/kerja praktek/*co-op program (al. higher order skills, leadership, team work)* *(Northeastern, 2014)*

Kebijakan Ditjen Belmawa

PENDIDIKAN TINGGI

Era Revolusi Industri 4.0

Reorientasi Kurikulum

- Literasi baru (data, teknologi, *humanities*) dikembangkan dan **diajarkan**.
- Kegiatan ekstra kurikuler untuk pengembangan kepemimpinan dan bekerja dalam tim agar terus dikembangkan.
- *Entrepreneurship* dan *internship* agar diwajibkan.

Hybrid/Blended Learning, Online

Menerapkan sistem pengajaran *Hybrid/Blended Learning* melalui SPADA-IdREN.

Unit Khusus *Life-long Learning*

Disarankan perguruan tinggi mempunyai unit yang secara khusus memberikan layanan *life-long learning*.

Hibah dan Bimtek dari Belmawa untuk reorientasi kurikulum (GEN-RI 4.0) untuk 400 PT

Digital natives entering the scene

„ Many teens today go online to socialize with friends they know from physical settings and to portray themselves in online contexts that are more tightly wedded to unmediated social communities. "
Danah Boyd, 2014

New mental models!

Thinking and sensing

- scanned reading
- fast response
- picture-oriented

New learning styles

Learning

- game-based learning
- used to direct feedback

New competencies

Working habits

- multi-tasking
- non-linear approach
- tech-savvy

New structures

Social life

- networked
- community-oriented

PENDIDIKAN AGRIBISNIS DAN PENYULUHAN PERTANIAN DI ERA "AGRICULTURE 4.0": sebuah wacana pemikiran

4 point penting:

- Role
- Governance
- Structure
- Curriculum

Role of Study Program

- Sebagai sebuah lembaga pendidikan, program studi harus dapat menghasilkan lulusan yang:
  - berdaya saing dan bertanggungjawab terhadap masyarakat dan lingkungan sekitarnya
  - mempunyai pemikiran progresif dan kreatif di era 4.0 ini.

Governance

- Program studi harus mampu mengintegrasi budaya akademik dan budaya korporat -- bersifat “hybrid”
- Program studi harus dapat memenuhi tantangan global tanpa harus mengesampingkan akademik
- Program studi harus mampu mengedepankan “autonomous governance” nya

Structure

- Hypermarket structure:
  - akademik,
  - keahlian,
  - Penelitian/penyelidikan dan
  - soft skills.
- Inter ataupun intra disiplin

Curriculum

- Bersifat outcome based --- kompetensi
- Proses belajar harus lebih bersifat “student centered learning”
- Work based or project based – life and career skills
- Melibatkan industry atau stakeholders pengguna lulusan
- Penggunaan bahasa asing
- Optimalisasi penggunaan ICT: Internet of Things

Peluang pengembangan:

Capacity Building Grant from NSF - USA

IUSE: EHR PROGRAM

Improving the quality and effectiveness of the education of undergraduates in all of the STEM fields

Improving Undergraduate STEM Education

The goal of the IUSE:EHR Program is to catalyze colleges and universities and their faculties to provide highly effective, evidence-based teaching and learning experiences for their undergraduate students taking STEM courses. It supports the development and use of practices that are rooted in a solid research base. In pursuit of this goal, IUSE: EHR supports a broad range of projects on two tracks. The Engaged Student Learning track supports the development, use, and testing of instructional practices and curricular innovation that engage and improve student learning and retention in STEM. The Institutional and Community Transformation track supports efforts to increase the propagation of highly effective, evidence-based teaching and learning by promoting this activity broadly at the discipline, academic department, and institutional levels. IUSE: EHR, managed by the Education and Human Resources Directorate, is one component of NSF's larger cross-directorate investment in improving undergraduate STEM education.

IUSE: EHR invites proposals that address immediate challenges and opportunities that are facing undergraduate STEM education, as well as those that anticipate new structures and new functions of the undergraduate learning and teaching enterprise. Principal Investigators are encouraged to consider the value of the project from the perspective of the end users, as well as the relationships, partners, and structures which would eventually be needed to sustain the improvement on a wide scale.

Track 1: Engaged Student Learning

This track focuses on design, development, and research studies that involve the creation, exploration, or implementation of tools, resources, and models that show particular promise to increase engagement of undergraduate students in their STEM learning and lead to measurable and lasting learning gains. Projects are encouraged to form collaborations among STEM disciplinary researchers, education researchers, and cognitive scientists so that their projects can best leverage what is known about how people learn and/or contribute to the growth of that body of knowledge. The undergraduate audience for IUSE projects includes students from two-year colleges to four-year colleges and universities, both declared and undeclared STEM majors, students whose courses of study require solid skills and knowledge of STEM principles, and students seeking to fulfill a general education requirement in STEM.

Exploration and Design Projects:
$300,000 max, up to 3 years

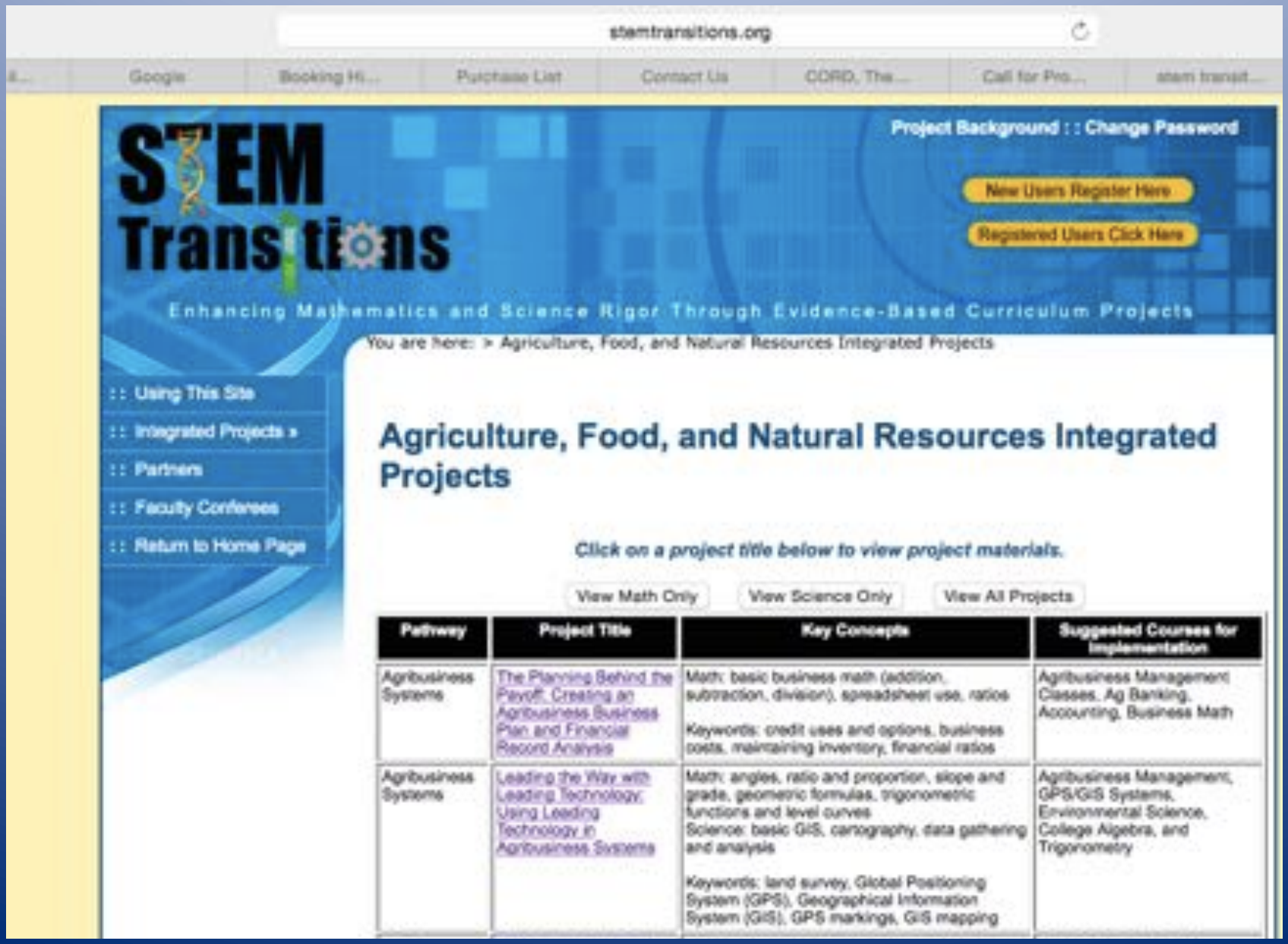
Development and Implementation I Projects:
$600,000 max, up to 3 years

Track 2: Institutional and Community Transformation

This track supports projects that use innovative approaches to substantially increase the propagation of highly effective methods of STEM teaching and learning in institutions of higher education or across/within disciplinary communities. Projects may use technology and distance education methods (or hybrid designs) when supported by evidence of potential effectiveness and are expected to leverage advances in STEM knowledge to motivate student interest. Projects may seek to transform high enrollment, lower division courses or may focus their efforts in multiple courses within a department or a college or in a particular disciplinary area. Faculty learning through continued professional development is also an important consideration for this track. Efforts to promote institutional change will typically require the efforts of teams of faculty members and support from the department chairperson, or college dean. They may also include Provosts and Presidents in the effort to elicit cultural changes required to achieve transformation at the institutional level. Leading members of academic and STEM/STEM education disciplinary professional societies may similarly lead change at the community level.

Exploration and Design Projects:
$300,000 max, up to 3 years

Contoh: STEM project in CORD.org



Structure of Module:

- Overall purpose
- Course (s)
- Key terms
- Student learning objectives
- Equipments and Materials
- Discussion
- Methods/teaching strategies
- Activity steps
  - Activity preparation
  - Expected Results
  - Wrap-up/conclusions
- Faculty resources
- Suggested links
- Extension options
- Assessment
- STEM related careers

CONTOH MODUL: IN AGRIBISNIS

Terimakasih