

# Executive Summary

October 9, 2015

The Master of Global Engineering Leadership Graduate Studies Committee (MGELGSC) approved the proposal to allow a customized technical track in Power Systems for Logan Rosevear. The technical track will consist of four, three credit hour courses for a total of twelve credit hours. This meets the program requirements that each technical track consist of 11-13 credit hours.

In the MGEL proposal, Section II, b, Technical Tracks, explains that “it will be possible for students to create individualized tracks.” And section VIII, Appendix C, 5.c, pgs. 32-33, explains “Individualized Tracks” for students to propose individualized tracks of study in special circumstances.

We do not have any applicable Electrical and Computer Engineering track for Logan Rosevear, therefore he would like to form an individualized track related to Power Systems. The four courses will provide the necessary additional skills he is seeking for his career and profession.

Logan lives in Columbus and can attend the four proposed courses on-campus just like any other graduate student. These courses do not have to be converted to an online format.

For questions contact either:

Bob Mick  
Director of Professional Programs  
[Mick.15@osu.edu](mailto:Mick.15@osu.edu)  
614-292-0393

Dr. Avraham Benatar  
MGEL Faculty Director  
[Benatar.1@osu.edu](mailto:Benatar.1@osu.edu)  
614-292-1390

## Master Global Engineering Leadership Graduate Studies Committee Members

Dr. Avraham Benatar  
Dr. Yann Guezennec  
Bob Mick  
Dr. Rajiv Ramnath  
Dr. Beth-Anne Schuelke-Leech  
Dr. H. Rao Unnava

Materials Joining Track Coordinator  
Automotive Systems Engineering Track Coordinator  
College of Engineering  
Enterprise Services & Architecture Track Coordinator  
John Glenn School of Public Affairs  
Fisher College of Business

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# **Master Global Engineering Leadership (MGEL) Customized Technical Track Proposal:**

## **Power Systems**

October 9, 2015

### **Rationale:**

The Master Global Engineering Leadership (MGEL) degree includes the choice of a technical track specialization that consists of four graduate engineering courses. The MGEL degree currently offers four approved technical track choices. MGEL students are also provided the opportunity to create individualized tracks under special circumstances.

Logan Rosevear, graduated with honors from The Ohio State University College of Engineering 2014 with a Bachelor's of Science degree in an Electrical and Computer Engineering. He is employed by Commonwealth Associates Inc. who does work for American Electric Power. He would like to pursue the MGEL degree but he would like to include a technical track in Power Systems because that is what is best aligned with his occupation and career path. We do not have a technical track in Power Systems, so he would like to form his own customized track for this reason.

The department of Electrical and Computer Engineering (ECE) is ideally suited and capable of offering a specialization in Power Systems. The ECE department includes the High Voltage and Power Electronics Laboratory that consists of a 3600 sq. ft. main high voltage facility and two satellite power electronics laboratories. The high voltage lab is the only one of its kind among the universities in the Midwest. Its operations are strongly supported and heavily utilized by electric power related industries. The power electronics facilities are unique to the universities in State of Ohio and belong to only handful of power electronics labs in the United States that deal with high power applications.

An MGEL track in Power Systems is consistent with the College's land grant mission for engineers who want to be able to respond to rapidly changing technical and global conditions and to accelerate their careers in industry. The Power Systems track will prepare Logan Rosevear to play a key role in innovative and challenging technical projects within American Electrical Power. The courses for this proposed track will enable Logan to learn about current power and energy related technologies including smart grids, sustainable energy and more.

### **Admission Requirements:**

The standard MGEL admission requirements are required including an undergraduate degree in electrical and computer engineering. Logan Rosevear meets these requirements.

## **Structure and Curriculum:**

The customized track in Power Systems will consist of four courses at three credit hours each for a total of twelve credit hours. This meets the program requirement that each technical track consist of at least 11-13 credit hours and will enable the student to meet the required number of credit hours to graduate from the MGEL program.

## **Courses**

*ECE 5025 - Power Electronics: Devices, Circuits, and Applications (3 cr hrs)*

Provides an introduction to power electronic conversion principles. Analytical techniques will be developed through the study of widely used converter circuits.

Prereq: 3020 (323), or Grad standing in Engineering, Biological Sciences, or Math and Physical Sciences. Not open to students with credit for 624, 724, or 844.

*ECE 5042 – Power Systems (3 cr hrs)*

A power system analysis course presenting power systems loads, modeling of transformers and power system model for voltage calculation and faults.

Prereq: 3040 (341), or Grad standing in Engineering, Biological Sciences, or Math and Physical Sciences. Not open to students with credit for 640, 740, or 741.

*ECE 5043 – Power Systems – Analysis and Operation (3 cr hrs)*

Power systems analysis and operations, including steady-state analysis, state estimation, and economic operation. Prereq: 3040, and ECE major; or Sr standing and ISE major; and Math 2568; or Grad standing in engineering or biological sciences or math and physical sciences. Cross-listed in ISE.

*ECE 7843 – Advanced Topics in Power Systems (3 cr hrs)*

Advanced topics of power system protection, beginning with equipment protection and evolving into system wide protection design and operation to accommodate smart-grid technologies. Prereq: 5052 or 740. Not open to students with credit for 741.

## **Prerequisites**

The prerequisites for this specialization track are the same as those listed in each course.

## **Program Administration and Support:**

Prof. Jin Wang will serve as the advisor for the student in this customized track. Administrative issues will be managed by the College of Engineering Director of Professional Programs.

## **Letters of Support:**

ECE GSC

ECE Department Chair

# Appendix A

**Mick, Robert**

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**Subject:** FW: MGEL Power Track - Grad Studies Committee

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**From:** Serrani, Andrea  
**Sent:** Monday, October 05, 2015 11:01 PM  
**To:** Mick, Robert <mick.15@osu.edu>  
**Cc:** Johnson, Joel <johnson.1374@osu.edu>; Wang, Jin <>wang.1248@osu.edu>  
**Subject:** Re: MGEL Power Track - Grad Studies Committee

Mick  
greetings. The GSC has approved the creation of an Individualized Track in Power Systems within the MGEL program.

Best regards,

Andrea

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Andrea Serrani  
Professor  
Chair of Graduate Studies  
Department of Electrical and Computer Engineering  
The Ohio State University  
412 Dreese labs  
2015 Neil Ave  
Columbus, OH - USA  
phone: 614 292 4976  
<http://www.ece.osu.edu/~serrani/>

# Appendix B

**Mick, Robert**

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**Subject:** FW: MGEL Power Track - Grad Studies Committee

-----Original Message-----

From: Johnson, Joel  
Sent: Friday, October 09, 2015 10:46 AM  
To: Mick, Robert <mick.15@osu.edu>  
Subject: RE: MGEL Power Track - Grad Studies Committee

Hi Bob,  
I approve the customized track.

Joel

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Joel T. Johnson, Department Chair and Prof. -- The Ohio State University  
E-mail: johnson@ece.osu.edu ----- Dept. of Elec. & Comp. Eng.  
Voice: (614) 292-2571 or 1593 ----- 205 Drees Laboratories  
FAX: (614) 292-7297 ----- 2015 Neil Ave  
URL: <http://www.ece.osu.edu/~johnson> ----- Columbus, OH 43210

On Fri, 9 Oct 2015, Mick, Robert wrote:

>  
> Hi Joel,  
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> Can you reply and state that you approve of this customized track as  
> well so I can include it with the proposal? Or if you prefer, a letter stating you approval. Trying to keep is simple for  
> you.  
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>  
> Thank you,  
>  
> Bob Mick  
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>  
> From: Serrani, Andrea  
> Sent: Monday, October 05, 2015 11:01 PM  
> To: Mick, Robert <mick.15@osu.edu>

> Cc: Johnson, Joel <johnson.1374@osu.edu>; Wang, Jin  
> <wang.1248@osu.edu>  
> Subject: Re: MGEL Power Track - Grad Studies Committee  
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> Mick  
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> greetings. The GSC has approved the creation of an Individualized  
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> Best regards,  
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> Andrea  
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> Andrea Serrani  
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> Professor  
>  
> Chair of Graduate Studies  
> Department of Electrical and Computer Engineering The Ohio State  
> University  
> 412 Drees labs  
> 2015 Neil Ave  
> Columbus, OH - USA  
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> <http://www.ece.osu.edu/~serrani/>  
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**Courses for Materials Joining Technical Track**

Department	Course #	Course Name	Credit Hrs
WELDENG	7001	Physical Principles in Welding Processes I	3
WELDENG	7101	Welding Metallurgy I	3
WELDENG	7201	Engineering Analysis for Design and Simulation	4
WELDENG	7406	Welding of Plastics and Composites	3

**Courses for Automotive Systems Engineering Track**  
**Select two focus areas that includes two courses each**

Department	Course #	Course Name	Credit Hrs
Focus area 1			
MECHENG	7383	Electrochemical Energy Conversion and Storage Systems for Automotive Applications	3
MECHENG	7384	Energy Modeling, Simulation, Optimization and Control of Advanced Vehicles	3
Focus area 2			
MECHENG	7236	Powertrain Dynamics	3
ECE	5554	Powertrain Control Systems	3
Focus area 3			
MECHENG	7260	Automotive Noise and Vibration Control I	3
MECHENG	7262	Automotive Noise and Vibration Control II	3

**Courses for Enterprise Services and Architectures**

Department	Course #	Course Name	Credit Hrs
CSE	5231	Enterprise Software Engineering	2
CSE	5234	Applied Enterprise Distributed Computing for Engineers and Scientists	3
CSE	5241	Introduction to Databases	2
CSE	5235	Enterprise Services and Architectures	3



College of Engineering Committee on Academic Affairs  
Meeting Minutes 12 November 2015

Attendance:

Aero – James Gregory  
AVN – Not present (Seth Young)  
BME – Mark Ruegsegger - Chair  
CHE – Not present (Jeff Chalmers)  
CIV – Not present (Frank Croft)  
CSE – Not present (Ken Supowit)  
ECE – George Valco  
ENG PHY – Robert Perry  
ENV – John Lenhart  
FAB – Ann Christy  
ISE – Carolyn Sommerich (ASAP Rep)  
MSE – Sheikh Akbar  
ME – Not present (Rob Siston)  
WLD – Dave Farson  
Graduate Student – Joey McEnery & Anas Abumunshar  
Undergraduate Student – Kareem Rasul & Stiphany Tieu)

Non Voting:

Associate Dean for Undergraduate Education – Dave Tomasko  
KSA – Jane Murphy  
Committee Secretary – Ed McCaul  
Advisor – Nikki Strader

Guests – None

1. The minutes from the 1 October 2015 meeting were approved as written.
2. George Valco gave a report from Subcommittee A.
  - 2.1. The committee was informed that the Humanitarian Minor is with EED. Subcommittee A contacted EED about the minor and has given them some suggestions on changes to the administration and oversight of the minor, including the composition and chair of the oversight committee. One question that needs to be answered is who will have oversight of the minor – EED or Dave Tomasko's office. It is not up to Subcommittee A to make these decisions on the minor, rather a final version should be given to the subcommittee for its review. The comment was made that the minor may not be ready for review until spring semester.
  - 2.2. The committee was informed that:
    - 2.2.1. the Aviation Minor has been sent back to CAA after its list of technical elective courses was changed;
    - 2.2.2. CAA sent the Nuclear Minor back and Nuclear's faculty are reviewing it to determine if it will still be viable without graduate courses being part of it;
    - 2.2.3. CAA sent the Computational Science Minor back. It appears that the issues with the minor have been resolved and that it should be given to Subcommittee A soon.

- 2.3. George Valco made a motion that the sentence “One member shall also be elected from the Department of Engineering Education.” be added to Appendix A, Section 1.1 of the college’s Pattern of Administration which describes CCAA membership. Sheikh Akbar seconded the motion. The floor was opened for discussion.
  - 2.3.1. The committee was given a handout outlining the rationale behind Subcommittee A’s recommendation. (Handout is attached.) The subcommittee had considered a more general wording, but decided to keep it limited to EED as they would be the only department without a representative. Other programs that offer graduate degrees and do not offer an undergraduate degree were considered for membership, but all of them are in departments which have membership in CCAA or are programs that are cross disciplinary with units outside of the college. In addition, the subcommittee did not want to increase the size of the committee where it would become unwieldy.
  - 2.3.2. There being no further discussion a vote was taken: 11 approved, 0 opposed, and 0 abstentions. The motion passed. The proposed change will be sent to Rudy Buchheit so that it can be voted on at the next faculty meeting.
3. Carolyn Sommerich presented the Course Proposal Subcommittee’s recommendations.
  - 3.1. Carolyn Sommerich made a motion the new course requests ECE 2021, 2027, 2061, 2067 and 5227 and that the course change requests for ECE 2020, 2060, 2560, 3010, 3020, 3027, 3030, 3040, 3050, and 3561 be approved. George Valco seconded the motion. The floor was opened for discussion.
    - 3.1.1. The committee was informed that 2021, 2027, 2061, and 2067 are designed for transfer students that have credit for part of an ECE course, but not the entire course. For 2560, 3010, 3020, 3027, 3030, 3040, 3050, and 3561 ECE is adding some of the new courses to their prerequisites. 5227 is a new course that is well within ECE’s area of interest. For 2020 and 2060 recitations are being added to them.
    - 3.1.2. The comment was made that ECE was waiting until their curriculum changes were approved before they submitted the associated course requests.
    - 3.1.3. The question was asked as to how many transfer students would need these new transfer courses each year. The response was about 10 per year.
    - 3.1.4. There being no further discussion a vote was taken: 11 approved, 0 opposed, and 0 abstentions. The motion passed.
  - 3.2. Carolyn Sommerich made a motion that the new course requests for ENGR 5901.02H, 5902.02H, and 7240 be approved. George Valco seconded the motion. The floor was opened for discussion.
    - 3.2.1. The committee was informed that 5901.02H and 5902.02H will be the capstone courses for students in the Integrated Business and Engineering (IBE) Program while 7240 will be one of the courses EED will be using in their Engineering Education Graduate Program.
    - 3.2.2. The question was asked as to what the retention rate was for the IBE Program. The response was that the first group of students started with 32, but are down to 23. The second group of students started with 36 and is down to 28 or 29. Most of the students leaving the program have been from business.

- 3.2.3. The question was asked as to whether there will be a new course designation for EED. The response was that this is being worked on in EED and the Core Committee. We will be able to do this administratively without it going to CAA. However, the proposed changes will be presented to CCAA.
  - 3.2.4. There being no further discussion a vote was taken: 11 approved, 0 opposed, and 0 abstentions. The motion passed.
  - 3.3. Carolyn Sommerich made a motion that the new course requests for ISE 5521, MSE 6756.71, and MSE 6756.72 be approved. Sheikh Akbar seconded the motion. The floor was opened for discussion.
    - 3.3.1. The committee was informed that:
      - 3.3.1.1. ISE 5521 is a seven week course and has concurrence from MSE and ME. ISE will be creating other seven week courses in the future;
      - 3.3.1.2. MSE 6756.71 and MSE 6756.72 are both seven week, one hour, graduate courses designed for graduate students in MSE.
    - 3.3.2. The question was asked as to why MSE was using decimals for their new courses. The response was that this would allow them to create a series of courses in similar topics and that other departments have done the same thing.
    - 3.3.3. There being no further discussion a vote was taken: 11 approved, 0 opposed, and 0 abstentions. The motion passed.
  - 3.4. Carolyn Sommerich made a motion that the course change requests for CSE 2231, ENGR 5797.14, and ME 2850 be approved. George Valco seconded the motion. The floor was opened for discussion.
    - 3.4.1. The committee was informed that
      - 3.4.1.1. CSE is adding Marion campus to 2231;
      - 3.4.1.2. The changes to ENGR 5797.14 include changing the time of the trip from spring break to May and reducing the prerequisites so that younger students will be able to take the course;
      - 3.4.1.3. ME is adding Math 2174 as a prerequisite to ME 2850.
    - 3.4.2. There being no further discussion a vote was taken: 11 approved, 0 opposed, and 0 abstentions. The motion passed.
  - 3.5. Carolyn Sommerich made a motion that the course withdrawal requests for ME 8000, 8043, and 8100 be approved. Dave Farson seconded the motion. The floor was opened for discussion.
    - 3.5.1. The committee was informed that there has been no interest in any of these courses and that is why ME wants to withdrawal them
    - 3.5.2. There being no further discussion a vote was taken: 11 approved, 0 opposed, and 0 abstentions. The motion passed.
  - 3.6. The committee was informed that that the committee secretary had approved ECE 3090 as the changes to its prerequisites were making it easier for students to take the course.
4. Dave Farson presented a report from Subcommittee B.
- 4.1. Subcommittee B has received two proposed changes to the MGEL curriculum. One deals with a new track in ECE while the other deals with using ENGR 7100 in lieu of a group studies course. These changes have been approved by the Graduate Chairs

Committee and the creation of the new track follows the procedure set out in the original proposal.

4.1.1. The question was asked as to why these two proposals have been brought before the committee. The response was that Bob Mick wants to get the changes approved by the Graduate School.

4.1.2. The comment was made that these proposals do not need to be approved by the Graduate School. The comment was made that Bob Mick is still learning the system and wants to make sure that everything is done right.

4.1.3. The question was asked as to whether there are specific course numbers that have been reserved for this program. The response was no. The question was asked as to whether Bob Mick has discussed this with EED. The response was no.

4.1.4. It was decided that the addition of the new track did not need CCAA's approval as its creation followed the procedure set out in the original proposal and that the chair will let Bob Mick know that such changes do not need to come to CCAA.

4.2. Dave Farson made a motion that the proposed course conversion from a group studies course to 7100, contingent on CCAA receiving appropriate syllabi and approving the actual course be approved. George Valco seconded the motion. The floor was opened for discussion.

4.2.1. There being no discussion a vote was taken: 11 approved, 0 opposed, and 0 abstentions. The motion passed.

5. Dave Tomasko updated the committee on various academic issues.

5.1. Making EEIC the Department of Engineering Education (EED) has been approved by the Board of Trustees.

5.2. Michelle Brown will be taking over the dual enrollment program in which a student can be in high school and at the same time be taking courses at OSU.

5.3. The Core Committee has been working on what its new mission will be with the creation of EED to include which group will have responsibility for which courses. The current thinking is that EED will have responsibility for the first year courses as well as those courses with technical content while the Core Committee will oversee all of the other undergraduate ENGR courses. In addition, we may need to create a new course designation of ENGREDU which will include all of the graduate courses that will be used for the graduate Engineering Education program.

5.4. The proposed summer schedule which has 4, 6, 8, and 12 week sessions has been endorsed by a number of committees and has gone to the faculty senate for their approval. There are still a number of issues that need to be worked out such as faculty work load. Currently the faculty's work load begins on the first day of classes in the autumn and goes until the end of May. There has not been any thought of changing faculty and TA contacts for this year. Funding of summer international travel is another issue that needs to be resolved. One idea is to discount tuition in the summer. The proposed summer schedule does have two days between spring graduation and the start of summer classes, with summer classes beginning on a Wednesday.

5.5. Everyone was asked as to whether or not they will be offering courses during the new summer schedule.

- 5.5.1. The comment was made that many of our study abroad courses will be offered in May.
  - 5.5.2. The comment was made that CSE has previously offered and is planning on offering some courses during the summer.
  - 5.5.3. The comment was made that KSA has previously offered and is planning on offering some courses during the summer.
  - 5.5.4. The comment was made that Welding has offered lab courses in the summer.
  - 5.5.5. Everyone was asked to let Dave Tomasko know on whether or not their department plans on offering any courses during summer.
  - 5.6. Everyone needs to make sure that anyone giving a final exam on the last two days, Wednesday and Thursday, of finals this semester knows that they will have very little time to submit grades for graduating seniors as grades are due at 5:00 PM on that Friday.
  - 5.7. The university president has been invigorating the university's teaching institute. The institute's four key areas of interest are: faculty support, scholarship, policy development, and communications. This will be a university level institute, but, currently, they have no staff, money, or space.
  - 5.8. Everyone was reminded that they need to get their department's low enrollment policy, or a statement that the department does not have one, to Dave.
6. The meeting was adjourned at 3:15.

From Appendix A of the College of Engineering Pattern of Administration

### Recommendation from Subcommittee A

1.1 Faculty Membership: One member shall be elected from each undergraduate degree-granting program, including the Department of Food, Agricultural and Biological Engineering, Center for Aviation Studies and the Engineering Physics Program; but excluding the Austin E. Knowlton School of Architecture. One member shall also be elected from the Department of Engineering Education. Each College Center offering an approved undergraduate degree program will be permitted to elect a member. The term of membership shall be three years, such terms beginning at the start of autumn semester.

#### Rationale:

- Paragraph 1.7 of the CoE POA describes the Responsibility of Academic Policy that resides with CCAA, which includes recommendations on courses and curricula offered by the college and divisions thereof. EED's impact on all undergraduates through the courses it will offer argues for EED having a voting representative on CCAA.
- Paragraph 1.6 of the CoE POA describes the Powers Delegated to CCAA, which includes approval or disapproval of new courses, and proposals for changes to courses and curricula. EED's offering of courses used in all undergraduate curricula in the college argues for EED having a voting representative on CCAA.

Subcommittee A considered implementing more general wording, such as "One member shall also be elected from each department in the college that does not offer and undergraduate degree program." But the subcommittee elected to not recommend that at the present time, since EED is currently unique in that regard. The subcommittee felt that such a broadening would be best addressed at such time that another such department were created, when the nature of the department were known.

Subcommittee A considered expanding membership to graduate degree programs that do not have a similarly named undergraduate degree program, but elected to not include such a recommendation at this time.

- Those programs are either offered from departments that already have membership on CCAA, or are interdisciplinary across colleges (e.g. CoE and Fisher College of Business).
- Subcommittee A is not aware of issues for which those programs felt they were inadequately represented on CCAA through existing departmental representatives.
- Subcommittee A was concerned about making the CCAA membership so large that operation of the committee became unwieldy.