College of Engineering Committee on Academic Affairs  
Meeting Minutes 19 February 2015

Attendance:
- Aero – Carl Hartsfield
- AVN – Not present (Seth Young)
- BME – Mark Ruegsegger - Chair
- CHE – 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 – Not present (Carolyn Sommerich (ASAP Rep))
- MSE – Not present (Sheikh Akbar)
- ME – Rob Siston
- WLD – Dave Farson
- Graduate Student – Not present (Beenish Saba, Ankita Majumder)
- Undergraduate Student – Kareem Rasul (not present Amber Harriger)

Non Voting:
- Associate Dean for Undergraduate Education – Dave Tomasko
- KSA – Holly Griffin (for Maria Conroy)
- Committee Secretary – Ed McCaul
- Advisor – Nikki Strader

Guests – None

1. The minutes from the 22 January 2015 meeting were approved as corrected.

2. George Valco made a motion that the Environmental Engineering Minor be approved contingent upon removal of “Approved by” in the sentence “Approved by the Department of Civil, Environmental and Geodetic Engineering”. Robert Perry seconded the motion. The floor was opened for discussion. (Proposal is attached.)
   2.1. The committee was informed that Subcommittee A reviewed the Environmental Engineering Minor and sent it back to the program for revision. Changes were made to the proposal and the subcommittee is now recommending that it be approved with the contingency noted in the motion.
   2.2. The suggestion was made that the sentence in question be changed to contact information for the department.
   2.3. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion with the contingency passed.

3. George Valco made a motion that the Aviation Minor be approved. Carl Hartsfield seconded the motion. The floor was opened for discussion. (Proposal is attached.)
3.1. The committee was informed that Subcommittee A reviewed the Aviation Minor and sent it back to the program for revision. The proposal was revised and the subcommittee is recommending that it be approved.

3.2. The question was asked as to what the minimum and maximum hours a minor needed to have. The response was that the minimum was 12 and the maximum was 18.

3.3. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion passed.

4. George Valco made a motion that the CIS Minor be approved. Ann Christy seconded the motion. The floor was opened for discussion. (Proposal is attached.)

4.1. The committee was informed that Subcommittee A reviewed the Computer and Information Science Minor and sent it back to the program for revision. The proposal was revised and the subcommittee is recommending that it be approved.

4.2. The question was asked as to whether this was a new minor. The response was that all of the minors are current minors, but that all minors need to be reapproved by CAA due to the new university policy on minors.

4.3. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion passed.

5. George Valco made a motion that the Computational Science and Engineering Minor be approved. Carl Hartsfield seconded the motion. The floor was opened for discussion. (Proposal is attached.)

5.1. The committee was informed that Subcommittee A reviewed the Computational Science and Engineering Minor and sent it back to the program for revision. The proposal was revised and the subcommittee is recommending that it be approved.

5.2. The comment was made that this minor goes beyond OSU as it is also offered by the Ralph Regula School of Computational Sciences on a state wide bases.

5.3. The comment was made that Condition h, “No more than 3 credit hours of course work graded Satisfactory/Unsatisfactory may be included in the minor“, shown on the fourth page of the proposal is not included on the advising sheet even though all of the other conditions are. Addition of this condition to the advising sheet was accepted as a friendly amendment to the motion.

5.4. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion with the contingency passed.

6. George Valco made a motion that CCAA provide a concurrence letter to the John Glenn College of Public Affairs for their proposed Science, Engineering, and Public Policy Minor. Ann Christy seconded the motion. The floor was opened for discussion.

6.1. The committee was informed that this is a new minor and the John Glenn College has asked for engineering’s concurrence, which Subcommittee A is recommending that we provide.

6.2. Subcommittee A has reviewed the minor and recommended some clarification be made to it, which was done, although the John Glenn College was informed that the subcommittee’s recommendation of concurrence was not contingent on the changes being made.
6.3. The question was asked as to whether any Engineering faculty are involved with the minor. The response was yes, Jeff Bielicki has an appointment with both CEEGS and the John Glenn College.

6.4. The question was asked as to whether six credit hours can overlap with GE requirements. The response was yes.

6.5. The comment was made that City and Regional Planning may have some courses that would be applicable to the minor. The comment was made that there were some City and Regional Planning courses in an earlier draft of the minor, but they were graduate level courses and taken out as it is an undergraduate minor.

6.6. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion passed.

7. Ann Christy informed the committee that the Engineering Sciences minor is ready to be submitted, that the Humanitarian Minor is still being reviewed, and that EEIC would like to put the Technological Studies Minor in limbo and will submit a letter to that effect.

8. Ann Christy informed the committee that EEIC is still working on the proposal for it to become a department along with the needed Patterns of Administration and Promotion and Tenure documents. The comment was made that even if the documents have not been fully reviewed by EEIC that the drafts should be sent to CCAA for its review as the time needed to get CCAA’s approval and a vote by the college faculty this semester is becoming critical.

9. Dave Farson informed the committee that Subcommittee B has received the ECE Curriculum Revision Proposal and that it looks good at an initial reading. The biggest changes to the curriculum will be in the sophomore year. The comment was made that there are also new course and course change requests associated with the proposal and that the Course Proposal Subcommittee will be reviewing them at its next meeting.

10. Carl Hartsfield informed the committee that the Course Proposal Subcommittee has an issue with CSE 5032, Foundation I: Discrete Structures, and would like to get the committee’s opinion on the course. The issue is that it is the same course as CSE 2321 with the except that 5023 is worth two credit hours while 2321 is worth three credit hours. Although 5032 is directed at non CSE graduate students, it seems strange to the Course Proposal Subcommittee that graduate students would be taking the same course as sophomores.

9.1. The comment was made that other programs have similar courses.

9.2. The comment was made that this was discussed for other pairs of CSE courses when we switched to semesters.

9.3. The comment was made that if a graduate student took a sophomore level course that they would not receive graduate credit for it and that is why some programs have similar courses at different levels.

9.4. Mark Ruegsegger commented that BME has some similar courses, but that graduate students cannot count them towards their degree.

9.5. The comment was made that a student in the graduate program in Education may need to take an undergraduate course in Physics to qualify as a high school
physics teacher and, thus, would need to take a graduate level course with undergraduate content.

10.6. The comment was made that since some programs are already doing it that denying this request would not be fair.

10.7. The comment was made that graduate students can take and count a 4000 level course outside of their degree program so, why not have all of these courses at the 4000 level.

10.8. The question was asked as to why there is an hour difference between the two courses. The response was that it is assumed that graduate students will be able to complete the out of class work faster than the undergraduates.

10.9. Carl stated that the Course Proposal Subcommittee would discuss this course again and bring a recommendation back to the committee.

11. Carl Hartsfield made a motion that the new course requests for ENGR 1282.04H, Fundamentals of Engineering for Honors 2 – Integrated Business & Engineering, and 5710, Engineering Research Communications, be approved. Robert Perry seconded the motion. The floor was opened for discussion.

11.1. The committee was informed that 1282.04H is the second semester Introduction to Engineering course for students in the Integrated Business and Engineering program while 5710 is designed to help seniors and graduate students improve their writing and presentation skills.

11.2. The question was asked as to why students could take 1281.01H or 1281.02H or 1281.03H as prerequisites for 1282.04H if they are supposed to be a cohort. The response was that the Integrated Business and Engineering program may add students the second semester if other students have dropped from the program and the new students meet the requirements.

11.3. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion passed.

12. Carl Hartsfield made a motion that the new course request for ME 5700, Introduction to Musculoskeletal Biomechanics, be approved. Ann Christy seconded the motion. The floor was opened for discussion.

12.1. The committee was informed that the course has concurrence from ISE and BME and will be offered to both undergraduate and graduate students.

12.2. The question was asked as to why the course was being offered at the 5000 level, but is an introductory course. The response was that the course integrates both mechanics and biology and most students have never done this before and that new biology material is introduced.

12.3. There being no further discussion a vote was taken: 9 approved, 0 opposed, with 1 abstention. The motion passed.

13. Carl Hartsfield made a motion that the course change requests for CSE 1222, Introduction to Computer Programming in C++ for Engineers and Scientists, and CSE 2321, Foundations I: Discrete Structures, be approved. Robert Perry seconded the motion. The floor was opened for discussion.
13.1. The committee was informed that the only change was to allow 1222 to be offered at the Newark Campus and 2321 to be offered at the Lima campus.
13.2. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion passed.

14. Carl Hartsfield made a motion that the course change requests for ECE 3027, Electronics Laboratory, ECE 6193, Individual Studies in Electrical and Computer Engineering, ECE 7080, Ethics and Professionalism, and ECE 8193, Individual Studies in Electrical and Computer Engineering, be approved. George Valco seconded the motion. The floor was opened for discussion.
14.1. The committee was informed that the proposed change to:
   14.1.1. ECE 3027 is to increase it from 0.5 to 1 credit hour. In addition, ECE is proposing that it become a required course in their curriculum proposal;
   14.1.2. ECE 6193 is to change the level of offering to Masters from Masters and Doctoral;
   14.1.3. ECE 7080 is to add “and social justice” to its description;
   14.1.4. ECE 8193 is to change the level of offering to Doctoral from Masters and Doctoral.
14.2. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion passed.

15. Carl Hartsfield made a motion that the course change request for ISE 3400, Production Planning and Facilities Design, be approved. George Valco seconded the motion. The floor was opened for discussion.
15.1. The committee was informed that the only change was adding ISE 3200 to the prerequisites.
15.2. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion passed.

16. Carl Hartsfield made a motion that the course withdrawal request for ME 2651, FIRST Robotics, be approved. Robert Perry seconded the motion. The floor was opened for discussion.
16.1. The committee was informed that the faculty member who taught the course has retired and the program has been taken on by ECE.
16.2. The question was asked as to whether ECE had proposed a new course for the project. The response was no and that enrolling in the course had always been optional.
16.3. There being no further discussion a vote was taken: 10 approved, 0 opposed, and 0 abstentions. The motion passed.

17. The committee was informed that the committee secretary had approved dropping the prerequisite of “permission of instructor” from the college’s ENGR study aboard courses. The reason for the change was that the students are screened by the Office of International Affairs prior to them being able to register for a study aboard course.

18. Dave Tomasko updated the committee on various academic issues.
18.1. To date only one department has provided feedback on the New Degree Task Force Report. Feedback needs to be to Dave by the end of this semester.

18.2. The committee was asked as to what issues and experiences they have had with May term courses. The reason for the question is that the Provost has asked for opinions on May term courses.

18.2.1. Rob Siston commented that the ME capstone course has been offered May term and a lot of students have taken it. The question was asked as to whether the short four week term is working pedagogically. The response was yes. The question was asked as to how ME gets someone to teach it. The response was that Tony Luscher is teaching it, but Rob did not know what he was offered to teach it.

18.2.2. Holly Griffin commented that KSA has been using the May term to offer various lab courses.

18.2.3. The comment was made that there are a number of study aboard courses offered during May.

18.2.4. Ann Christy commented that ENGR 2367 has been offered May term and, although the time is compressed, that some instructors really like it.

18.2.5. Dave Farson commented that Welding has offered a one hour lab course during May term.

18.2.6. Nikki Strader commented that CSE has been offering one credit hour courses during May term and has offered courses during a combined May and Summer Term.

18.2.7. Nikki Strader commented that with Spring Semester graduation being on Sunday and May term beginning the next day, advisors have difficult with probation as students who are on the probation list may already be taking courses. When that happens units cannot dismiss them until after Summer Semester, which, in most cases, can mean that the student’s gpa has dropped even more. The question was asked as to how many students are impacted by this. The response was less than 50.

18.2.8. The comment was made that if students will have to start paying for credit hours in May the number of students enrolling in May will probably decrease.

19. Being out of time the meeting was adjourned at 2:05.
The Environmental Engineering minor will provide a wide range of undergraduate majors with an introductory foundation in sustainability, pollution prevention, environmental modeling, and pollution control technologies. By completing the minor in Environmental Engineering, students should add considerable to their major program skills and become more valuable to their future employer. Science majors will gain an understanding of engineering problem-solving methods and procedures, as well as standard pollution control technologies. Other engineering majors will become more aware of the environmental effects of technologies in their major field, and how to reduce these effects.

Prerequisites for Environmental Engineering Minor

Must be completed prior to beginning the minor program:
- Math 1151
- Chemistry 1220 General Chemistry II or Chemistry 1250 Chemistry for Engineers

Requirements for Environmental Engineering Minor:

Credit hour requirement: minimum of 15 credit hours

Required Courses: All 3 courses below must be completed
- ENVENG 3200 Fundamentals of EnvEng* (3 hrs)
- ENVENG 3210 Unit Operations in EnvEng (3 hrs) (POI)
- ENVENG 2100 Analytical Methods in EnvEng (3 hrs)

Electives of Minor

Select 6 hours of coursework from the approved elective list below. Engineering students may double-count 6 (six) credit hours from the minor with the technical elective portion of their engineering degree program.

*Civil Engineering students, who use ENVENG 3200 as one of the six Core Electives in the major must take an additional 3 hours of elective credit from below.

POI = student may need Permission of Instructor for enrollment if prerequisite is not part of major curriculum
(c) = concurrent requisite

Suggested Sequence of Course

<table>
<thead>
<tr>
<th>Autumn Semester</th>
<th>Spring Semester</th>
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</thead>
<tbody>
<tr>
<td>EnvEng 3200</td>
<td>EnvEng 3210</td>
</tr>
<tr>
<td>Electives</td>
<td>Electives</td>
</tr>
</tbody>
</table>

Environmental Engineering minor program guidelines

Required for graduation: No

Credit hours required: A minimum of 15 credit hours is required to complete the Environmental Engineering minor.

Transfer credit hours allowed: No more than one half of the credit hours required for the minor can come from transfer credit.

Overlap with the major: 12 hrs in the minor program must be distinct from the major program.

Double-counting: Students in Civil Engineering are permitted to double-count up 6 (six) credit hours from the minor with the technical elective portion of their engineering degree program.

Grades required

- Minimum C- for a course to be listed in the minor program
- Minimum 2.0 cumulative point-hour ratio (CPHR) required for the minor
- Course work graded Pass/Non-Pass cannot count towards the minor

Minor approval/changing the minor: A student who completes the minor following the requirements need only file their college’s minor program form with their academic advisor or college office. Any changes must be approved by the Department of Civil, Environmental and Geodetic Engineering

Filing the minor program form: The minor program form must be filed at least by the time the graduation application is submitted to the students’ respective department.
To: College Committee on Academic Affairs (CCAA)

Re: Aviation Minor

Date: January 8, 2015

CCAA Members

The Center for Aviation Studies offers students across campus a unique opportunity for exposure to the aviation field through completion of a minor. Many students in aeronautical and aerospace engineering will minor in aviation to gain a hands-on understanding of the aircraft that they design. If a student in any field wants to work in the aviation industry as a finance manager, scheduler, operations manager, or airport planner, a minor in aviation is highly recommended.

The minor requirements can be satisfied with a variety of aviation classes. One item to note is that completion of private pilot training (in addition to required courses) will satisfy the majority of the minor requirements. This way, a student can earn their private pilot certificate as well as earn college credit for the training.

The minor in aviation consists of a minimum of 17 credit hours of required and elective course work. The detailed aviation minor curriculum sheet is attached to this letter.

Please accept this short note as a request for the aviation minor to be recognized by the CCAA as an approved minor within the College of Engineering.

If you have any questions regarding this letter, please do not hesitate to contact me at young.1460@osu.edu or tel. 614-292-4556.

Regards,

Seth Young, Ph.D., A.A.E., CFI
McConnell Chair of Aviation
Director, Center for Aviation Studies
Associate Professor, Dept. of Civil, Environmental, and Geodetic Engineering
The Ohio State University
Aviation Minor Semester Requirements

The following guidelines are intended to assist students who will declare the Aviation minor Autumn 2014 or later.

Prerequisites for Aviation Minor:
None

Requirements of Minor

Semester credit hour requirement: 17 credit hours
At least 6 credit hours must be at the 3000-level or higher
Minimum grade of a B- is required in the following ground school courses in order to take associated flight lab(s): Aviation 2100 (in order to be eligible for Aviation 2101); Aviation 3100 (in order to be eligible for Aviation 3101); Aviation 4100 (in order to be eligible for Aviation 4101).

Required Courses (11 credit hours):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Term(s) Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIATN 2000 (3 hrs)</td>
<td>Intro to the Aviation Industry</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 2100 (5 hrs)</td>
<td>Private Pilot Fundamentals</td>
<td>AU, SP</td>
</tr>
<tr>
<td>AVIATN 3000 (3 hrs)</td>
<td>Aviation Management &amp; Marketing</td>
<td>AU, SP</td>
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</tbody>
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Elective Courses (min 6 credit hours)

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Term(s) Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIATN 2101 (2 hrs)</td>
<td>Private Pilot Flight Lab I</td>
<td>AU, SP, SU</td>
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<tr>
<td>AVIATN 2102 (2 hrs)</td>
<td>Private Pilot Flight Lab II</td>
<td>AU, SP, SU</td>
</tr>
<tr>
<td>AVIATN 2501 (2 hrs)</td>
<td>Commercial Cross Country Flight Lab</td>
<td>AU, SP, SU</td>
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<tr>
<td>AVIATN 2200 (3 hrs)</td>
<td>Aviation Communications</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 2300 (3 hrs)</td>
<td>Aircraft Performance and Weather</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 3100 (3 hrs)</td>
<td>Instrument Flight Fundamentals</td>
<td>AU, SP</td>
</tr>
<tr>
<td>AVIATN 3101 (3 hrs)</td>
<td>Instrument Flight Lab</td>
<td>AU, SP, SU</td>
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<tr>
<td>AVIATN 3193 (2-5 hrs)</td>
<td>Individual Studies in Aviation</td>
<td>AU, SP, SU</td>
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<tr>
<td>AVIATN 3194 (2-5 hrs)</td>
<td>Group Studies in Aviation</td>
<td>AU, SP</td>
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<td>AVIATN 3200 (3 hrs)</td>
<td>Aviation Regulations</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 3300 (3 hrs)</td>
<td>Aviation Human Factors and Safety</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 3400 (3 hrs)</td>
<td>Aviation Accident Investigation</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 3500 (3 hrs)</td>
<td>Airline Labor Relations</td>
<td>SP, SU</td>
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<tr>
<td>AVIATN 4000 (3 hrs)</td>
<td>Air Transportation Analysis I</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 4100 (3 hrs)</td>
<td>Commercial Flight Fundamentals</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 4101 (3 hrs)</td>
<td>Commercial Pilot Flight Lab</td>
<td>AU, SP, SU</td>
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<tr>
<td>AVIATN 4300 (2 hrs)</td>
<td>Advanced Multi-Engine Operations</td>
<td>SP, SU</td>
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<tr>
<td>AVIATN 4301 (2 hrs)</td>
<td>Commercial Pilot MEL Flight Lab</td>
<td>AU, SP, SU</td>
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<tr>
<td>AVIATN 4400 (3 hrs)</td>
<td>Airport Management</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 4800 (2-5 hrs)</td>
<td>Professional Practice in Industry</td>
<td>AU, SP</td>
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<tr>
<td>AVIATN 5000 (3 hrs)</td>
<td>Air Transportation Analysis II</td>
<td>SP, SU</td>
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<tr>
<td>AVIATN 5100 (2 hrs)</td>
<td>Flight Instruction Methodology</td>
<td>AU, SP</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Offered</td>
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<tr>
<td>AVIATN 5101</td>
<td>Flight Instructor SEL Flight Lab</td>
<td>AU, SP, SU</td>
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<tr>
<td>AVIATN 5102</td>
<td>Flight Instructor MEL Flight Lab</td>
<td>AU, SP, SU</td>
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<tr>
<td>AVIATN 5300</td>
<td>Airport Planning, Design and Development</td>
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**Notes:**

1. Aviation 2100 must be completed first and with a B- or higher in order for students to be eligible to register Aviation 2101
2. Additional fees are required for courses listed as a flight lab
3. Students should declare the Aviation minor prior to starting Aviation 3000
Center for Aviation Studies  
228 Bolz Hall  
2036 Neil Avenue, Columbus OH 43210-1110  
Tel. 614-292-2405  
http://www.aviation.osu.edu

Overview
The minor in Aviation consists of a minimum of 17 credit hours of required and elective course work as listed below.

The Aviation minor does not have an application process. A student needs to file a Minor Program Form with their academic advisor or college office prior to starting the 3000-level or higher Aviation courses.

Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses

Required courses (11 credit hours)
Aviation 2000: Intro to the Aviation Industry (3)  
Aviation 2100: Private Pilot Fundamentals (5)  
Aviation 3000: Aviation Management & Marketing (3)

Elective course work (min 6 credit hours)
Select at least six (6) credit hours from:

Aviation 2101: Private Pilot Flight Lab I (2)  
Aviation 2102: Private Pilot Flight Lab II (2)  
Aviation 2501: Commercial Cross Country Flight Lab (2)  
Aviation 2200: Aviation Communications (3)  
Aviation 2300: Aircraft Performance and Weather (3)  
Aviation 3100: Instrument Flight Fundamentals (3)  
Aviation 3101: Instrument Flight Lab (3)  
Aviation 3193: Individual Studies in Aviation (2-5)  
Aviation 3194: Group Studies in Aviation (2-5)  
Aviation 3200: Aviation Regulations (3)  
Aviation 3300: Aviation Human Factors & Safety (3)  
Aviation 3400: Aviation Accident Investigation (3)  
Aviation 3500: Airline Labor Relations (3)  
Aviation 4000: Air Transportation Analysis I (3)  
Aviation 4100: Commercial Flight Fundamentals (3)  
Aviation 4101: Commercial Pilot Flight Lab (3)  
Aviation 4300: Advanced multi-engine operations (2)  
Aviation 4301: Commercial Pilot MEL Flight Lab (2)  
Aviation 4400: Airport Management (3)  
Aviation 4800: Professional Practice in Industry (2-5)  
Aviation 5000: Air Transportation Analysis II (3)  
Aviation 5100: Flight Instruction Methodology (2)  
Aviation 5101: Flight Instructor SEL Flight Lab (2)  
Aviation 5102: Flight Instructor MEL Flight Lab (2)  
Aviation 5300: Airport Planning, Design, & Development (3)

Aviation Minor Program Guidelines

Required for Graduation  No

Credit Hours Required
A minimum of 17 credit hours. At least 6 credit hours need to be at the 3000 level or above

Transfer and EM Credit Hours Allowed
A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination toward the minor.

Overlap with the Major and Additional Minor(s)
- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minors.

Grades Required
- Minimum C- for a course to be listed on the minor.
- Minimum B- required for Aviation 2100, 3100 and 4100 in order to be eligible for associated flight labs.
- Minimum 2.00 cumulative point-hour ratio required for the minor.
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of course work graded Satisfactory/Unsatisfactory may count towards the minor.

X193 Credits
No more than 3 credit hours

Flight Labs
Flight lab fees are not included with Ohio State tuition and is therefore an additional charge. For a list of flight lab fees, please contact the Center for Aviation Studies.

Filing the Minor Program Form
The minor program form must be submitted by the student to their academic advisor or college office prior to starting the 3000-level or higher Aviation courses

Variation From Program
Any variation from the program described above needs the approval of the coordinating advisor in the Center for Aviation Studies.
Date: February 13, 2015  
To: Dr. Mark Ruegsegger, Chair, CCAA  
Re: Computer and Information Science Minor

Dear Dr. Ruegsegger,

The CSE Department currently offers a Minor program in Computer and Information Science. Recently, our Undergraduate Studies Committee, which I chair, came up with a proposal for some changes in the program. The idea of these changes was to make the program more flexible, in particular, to allow students in the program to take elective courses in areas of computer science, such as databases and artificial intelligence, that they may have a special interest in. The proposal was sent to our entire faculty and approved electronically in early December.

I had sent you a previous version of this proposal in early January and we got some comments back from Dr. George Valco, chair of Subcommittee A. We have updated the proposal taking account of those comments. I am attaching the updated proposal.

I hope CCAA will approve the proposed minor at an early date and forward it to CAA for final approval. If there are any questions about the proposed minor or if additional information is needed, please contact me.

Sincerely,

Neelam Soundarajan
Chair, Undergraduate Studies Committee
Dept. of Computer Science and Engineering
Computer & Information Science (CIS) Minor Requirements

Students interested in applying computing principles and practices in another discipline (in which they may be completing a major degree program) should consider completing the Computer & Information Science (CIS) Minor program. The program described below applies to students who begin the minor courses in Spring 2015 or later. Students who started in the existing minor program may complete either that program or the program described below.

A. Prerequisites for the Minor:
   CSE 1222: Introduction to Computer Programming in C++ (3 credit hours); or
   CSE 1223: Introduction to Computer Programming in Java (3 credit hours)

B. Requirements for the Minor:
   1. Credit hour minimum requirement: 17 credit hours
   2. Required courses (11 credit hours):
      a. Software:
         i. CSE 2122, Data Structures Using C++, (3 credit hours); or
         ii. CSE 2123, Data Structures Using Java (3 credit hours).
      b. Foundations:
         CSE 2321, Foundations I: Discrete Structures (3 credit hours)
      c. Systems:
         CSE 3430, Overview of Computer Systems For Non-Majors (4 credit hours)
      d. Computing Ethics:
         CSE 2501, Social, Ethical, and Professional Issues in Computing (1 credit hour)
   3. Elective courses (minimum: 6 credit hours):
      i. Must be chosen from CSE 2331, and CSE courses at the 3000-level or above;
      ii. Not more than 2 credit hours of CSE 425X courses;
      iii. The following tracks are recommended:
         a. Graphics: CSE 3541, 3902
         b. AI: CSE 3521; one of CSE 5522, 5523, 5524, 5525, 5526
         c. Networking: CSE 3461; one of CSE 3901, 4471, 5462, 5472, 5473
         d. Software Engineering: CSE 3231; one of 3232, 5234
         e. Databases: CSE 3241, 5242
         f. Programming languages: CSE 3341; one of 3231, 3901
         g. Theory: CSE 2331; one of 3321, 5351, 5361
   4. Note: Several of the courses listed under (3.iii) have additional prerequisites. These are currently being reconsidered and are expected to be revised to make them accessible to CIS minors. Note also that CSE 3430 is a new course, designed specifically for this minor, and is pending approval.

C. Recommended Sequence of Classes:
   Autumn: CSE 1222/1223       Spring: CSE 2122/2123
   Autumn: CSE 2321, 2501       Spring: CSE 3430
   Autumn: First elective       Spring: Second elective
Undergraduate Minor Program Policy

College Of Engineering
(Approved by CCAA, November 1999; Revised: February ’05, Feb. ’08, March ’10, May ’12, November ’12, April ’14)

Minor Programs at The Ohio State University:
An undergraduate minor consists of a coherent curricular program designed to allow students to pursue academic interests that go beyond their major. Students pursue minors to complement their major’s area of specialization, to better define themselves academically and to employers, to gain credit for classes previously taken that do not count towards a major degree, or merely to pursue other interests. In addition, some academic units require their students to obtain a minor. Students may take any minor in any college provided that they follow the curricular guidelines set by the college or unit that administers the minor.

Actions Required Of Students

Minors pursued by students with Majors in the College of Engineering are administered as follows:
1. Approval of many minors is managed entirely through the Degree Audit Reporting System (DARS).
2. Minor Program Forms will only be required if a student’s DARS does not certify the courses for the minor as prescribed by the college or unit that administers the minor.
   a. Minor Program Forms must be signed by an advisor in the college or unit that administers the minor and by the student’s advisor in their Major Program prior to the student being accepted into the Minor program. Copies of this form will be retained by the college or unit that administers the minor and the Major Program.
   b. Students typically file Minor Program Forms with the College of Engineering when they file applications to graduate. Students are advised to check with the college or unit that administers the minor in advance of the deadline for filing applications to graduate.
   c. To change a Minor after submitting a Minor Program Form, a student must re-file a new Minor Program Form with all the appropriate signatures.

Overlap With Majors Offered By The College Of Engineering
1. For the purposes of determining overlap between majors in the College of Engineering and 12 hour minimum for a minor, the major is defined as all specifically required courses.
   a. Approved substitutions for required courses are considered part of the major.
   b. Requirements for which the student must take one of two courses are considered part of the major.
2. Elective courses may overlap with the minor.
Computer and Information Science Minor Program Form

Student Name: ________________________________

Student Identification Number: ________________________________

Major: ________________________________

E-Mail Address: ________________________________

Name of Undergraduate Minor: Computer and Information Science

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE</td>
<td>1222/1223</td>
<td>Intro to programming in C++/Java</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>CSE</td>
<td>2122/2123</td>
<td>Data structures using C++/Java</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CSE</td>
<td>2321</td>
<td>Foundations I: Discrete Structures</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CSE</td>
<td>2501</td>
<td>Soc., Ethical, Prof. Issues in Computing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CSE</td>
<td>3430</td>
<td>Overview of Comp Sys. For Non-Majors</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**CSE Electives (minimum: 6 cr hrs):**
Choose from CSE 2331 and CSE courses at 3000-level and above; no more than 2 cr hrs of CSE 425X.

**Recommended tracks:**
- Graphics (CSE 3541, 3902);
- Databases (CSE 3241, 5242);
- AI (CSE 3521; one of: 5522, 5523, 5524, 5525, 5526);
- Networking (CSE 3461; one of 3901, 4471, 5462, 5472, 5473);
- Prog. languages (CSE 3341; one of 3231, 3901);
- Theory (CSE 2331; one of 3321, 5351, 5361)

<table>
<thead>
<tr>
<th>Elective Courses:</th>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Grade</th>
</tr>
</thead>
</table>

Total Credit hours (minimum: 17 hrs):

***Prerequisite for the minor; hours not included in the total for the minor.

Student Signature
Print: ____________________________  Signature: ____________________________  Date: ____________________________

Advisor Signature Major Program
Print: ____________________________  Signature: ____________________________  Date: ____________________________

Advisor Signature Minor Program
Print: ____________________________  Signature: ____________________________  Date: ____________________________

Notes:
- Students pursuing the minor do not have priority enrollment in CSE courses.
- No more than 6 credit hours of transfer credit and/or credit by examination may be counted for the minor;
- Minimum C- for a course to be included in the minor;
- Minimum 2.00 cumulative point-hour-ratio required in the minor course work;
- Course work graded Pass/Non-Pass cannot count on the minor;
- This form must be filed by the time the graduation application is filed; no other approval is needed.
Date:    February 13, 2015  
To:      Dr. Mark Ruegsegger, Chair, CCAA  
Re:      Minor in Computational Science and Engineering

Dear Dr. Ruegsegger,

The CSE Department currently offers a Minor in Computational Science and Engineering, designed for science and engineering majors who are interested in applying computational techniques to address problems in their own major area. The only change being proposed is to replace CSE 2221 by CSE 1223 (in the “Programming & Algorithms”) requirement of the minor; this will parallel the other two courses, CSE 12221/1222 that students may instead choose, to complete this requirement. In addition, we have specified a number of constraints that each student’s minor program must satisfy to make it consistent with the new rules that apply to all minor programs in the university.

I had sent you a previous version of this proposal in early January and we got some comments back from Dr. George Valco, chair of Subcommittee A. We have updated the proposal taking account of those comments. I am attaching the updated proposal. It maybe worth noting here that the Ralpha Regula School of Computational Sciences (RRSCS) (https://www.osc.edu/rrscs) “is a statewide virtual school focused on the exciting new area of computational science -- the use of computer modeling and simulation to solve complex business, technical and academic research problems”. Our minor program is designed to be consistent with the principles enunciated by RRSCS and its recommendations.

I hope CCAA will re-approve the Minor in Computational Science and Engineering at an early date. If there are any questions about the minor or if additional information is needed, please contact me.

Sincerely,

Neelam Soundarajan
Chair, Undergraduate Studies Committee
Dept. of Computer Science and Engineering
Computational Science and Engineering Minor

Undergraduate Minor Program Policy, College Of Engineering

(Approved by CCAA, November 1999;
Revised: February '05, Feb. '08, March '10, May '12, November '12, April '14)

Minor Programs at The Ohio State University:

An undergraduate minor consists of a coherent curricular program designed to allow students to pursue academic interests that go beyond their major. Students pursue minors to complement their major’s area of specialization, to better define themselves academically and to employers, to gain credit for classes previously taken that do not count towards a major degree, or merely to pursue other interests. In addition, some academic units require their students to obtain a minor. Students may take any minor in any college provided that they follow the curricular guidelines set by the college or unit that administers the minor.

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Minors pursued by students with Majors in the College of Engineering are administered as follows:

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   a. Approved substitutions for required courses are considered part of the major.
   b. Requirements for which the student must take one of two courses are considered part of the major.

2. Elective courses may overlap with the minor.
Computational Science and Engineering Minor Requirements

The Minor in Computational Science and Engineering is designed for science and engineering majors interested in applying computational techniques to address problems in their own major. The program is also appropriate for CSE/CIS majors interested in numerical and computational aspects of Computer Science. The program below applies to students who start the program in Autumn 2015 or later; students who started before that date may follow the previous program.

A. Prerequisites: (Hours not counted in minor since these courses are at 1000-level):

I. Programming and Algorithms:
   One of the following:
   a. CSE/ENGR 1221: Intro to Comp. Prgming in MATLAB (2 credit hours); or
   b. CSE 1222: Intro to Computer Programming in C++ (3 credit hours); or
   c. CSE 1223: Intro to Computer Programming in Java (3 credit hours)

B. Core Courses:

I. Simulation and Modeling: (3 credit hours):
   One of the following:
   a. BIOMEDE 5430: Finite element applications in BIOMEDE (3 credit hours); or
   b. CBE 5790: Modeling and simulation (3 credit hours); or
   c. ISE 2010: Systems modeling (3 credit hours); or
   d. ISE 5100: Discrete event simulation (3 credit hours); or
   e. MECHENG 5139: Applied finite element method (3 credit hours); or
   f. MATSCEN 2321: Modeling and simulation Lab I (3 credit hours)

II. Numerical Methods: (3 credit hours):
   One of the following:
   a. AEROENG 3581: Numerical methods in Aerospace Engineering (3 credit hours); or
   b. CIVILEN 2060: Numerical analysis methods for Civil/Env. Eng. Applns (3 cr hrs); or
   c. CSE 5361: Numerical methods (3 credit hours); or
   d. ECE 5510: Intro to computational electromagnetics (3 credit hours); or
   e. MATH 3607: Beginning scientific computing (3 credit hours); or
   f. MECHENG 2850: Intro to numerical methods (3 credit hours)

C. Discipline-Specific Computational Study: (3 credit hours):
   One of the following:
   a. AEROENG 5615: Intro to computational aerodyn. (3 credit hours); or
   b. CBE 5734: Molecular Informatics (3 credit hours); or
   c. CHEM 5440: Computational chemistry (3 credit hours); or
   d. CSE 2331: Foundations II: Data structures and alg. (3 credit hours); or
   e. CSE 2431: Systems II: Intro to Operating Systems (3 credit hours); or
   f. CSE 3241: Intro to database systems (3 credit hours); or
   g. CSE 3341: Prin. of prog. langs. (3 credit hours); or
   h. CSE 3421: Intro to computer architecture (3 credit hours); or
   i. CSE 3461: Computer networking and internet technologies (3 credit hours); or
   j. CSE 3521: Survey of AI I (3 credit hours); or
   k. CSE 3541: Computer game and animation tech. (3 credit hours); or
   l. ECE 5510: Intro to Computational Electromagnetics (3 credit hours); or
   m. MATSCEN 6756: Computational Materials Modeling (3 credit hours)
D. Electives (One required) (3 credit hours):
a. CIVILEN 3080: Econ. evaluation and optimization in Civ/Env. engr. (3 cr hrs)
b. CSE 5441: Intro to parallel computing (3 cr hrs)
c. CSE 5544: Intro to scientific visualization (3 cr hrs)
d. ECE 5759: Optimization for static and dyn. systems (3 cr hrs)
e. ISE 3200: Optimization for enterprise systems (3 cr hrs)
f. ISE 3210: Optimization for system design (3 cr hrs)
g. ISE 3990: Engineering optimization (3 cr hrs)
h. ISE 5200: Linear optimization (3 cr hrs)
i. MATSCEN 4181: Materials Selection (3 cr hrs)
j. MATH 2255: Diff. equations and their applications (3 cr hrs)
k. MATH 2415: Ordinary and partial diff. equations (3 cr hrs)

E. Discipline-specific capstone research/internship (>= 2 cr-hrs):
Computationally oriented capstone course(s) or individual research (>= 2 cr-hrs)

F. Additional Prerequisites: Most of the courses in the lists (B), (C), and (D) above have additional prerequisites which are, typically, part of the major programs in the respective fields. Thus they may be unsuitable for students pursuing other majors. Students should consult with their advisors or with Prof. Sadayappan(.1) of CSE if they have questions concerning which courses may be most appropriate for their individual cases.

Other Conditions: Each of the following conditions must also be satisfied:
a. The minor must include a minimum of 12 credit hours, not including 1000-level courses.
b. The minor must include at least 6 credit hours of 3000-level courses or higher.
c. No more than 6 hours of exam credit and/or transfer credit, including credit for courses from participating RRSCS institutions, may be counted toward the minor.
d. No more than 6 credit hours may overlap between the minor and courses used to meet GE requirements.
e. The minor must include a minimum of 12 credit hours that are distinct from the major program and/or additional minors.
f. Courses with a grade of less than C- may not be included in the minor.
g. Course work graded Pass/Non-Pass may not be included in the minor.
h. No more than 3 credit hours of course work graded Satisfactory/Unsatisfactory may be included in the minor.
i. A minimum of 2.00 cumulative point-hour ratio is required in the course work in the minor.

C. Recommended Sequence of Classes:
Autumn: Programing & Alg. Spring: Num. Mthds./Computational study
Autumn: Cmp. stdy/Num mthds. Spring: Simulation & modeling
Autumn: Elective Spring: Capstone res./internship
Computational Science and Engineering Minor Program Form

Student Name: ____________________________________________

Student Identification Number: ______________________________

Major: ___________________________________________________

E-Mail Address: __________________________________________

Name of Undergraduate Minor: Computational Science and Engineering

<table>
<thead>
<tr>
<th>Topic Category</th>
<th>Course Number, Title</th>
<th>Credit Hours</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prog. &amp; Algorithms</td>
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<td>***</td>
</tr>
<tr>
<td>Simulation &amp; Modeling</td>
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<tr>
<td>Numerical Methods</td>
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<td>Computational Study</td>
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<td>Elective</td>
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<td></td>
</tr>
<tr>
<td>Capstone research/internship</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours (min: 12)

***Prerequisite for the minor; hours not included in the total for the minor.

Student Signature

Print: ___________________ Signature: ___________________ Date: __________

Advisor Signature Major Program

Print: ___________________ Signature: ___________________ Date: __________

Advisor Signature Minor Program

Print: ___________________ Signature: ___________________ Date: __________

Notes:

- The minor must include a minimum of 12 credit hours, not including 1000-level courses. The minor must include at least 6 credit hours of 3000-level courses or higher.
- The course(s) for each topic category must be chosen from among those listed for that category in the requirements for the minor.
- No more than 6 hours of exam credit and/or transfer credit, including credit for courses from participating RRSCS institutions, may be counted toward the minor.
- The minor must include a minimum of 12 credit hours that are distinct from the major program and/or additional minors. No more than 6 credit hours may overlap between the minor and courses used to meet GE requirements.
- Neither courses with a grade of less than C- nor course work graded Pass/Non-Pass may be included in the minor.
- A minimum of 2.00 cumulative point-hour ratio is required in course work in the minor.
- This form must be filed by the time the graduation application is filed; no other approval is needed.