FINAL ASSESSMENT REPORT

PERIODIC PROGRAM REVIEW (PPR)
Bachelor of Engineering
Industrial Engineering
Faculty of Engineering and Architectural Science

In accordance with the Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the undergraduate Industrial Engineering Program. This report identifies the strengths of the program, together with opportunities for program improvements and enhancements, and it sets out and prioritizes the recommendations that have been selected for implementation.

This report also includes an Implementation Plan that identifies who will be responsible for approving the recommendations set out in the final assessment report; who will be responsible for providing any resources entailed by those recommendations; any changes in organization, policy, or governance that will be necessary to meet the recommendations, who will be responsible for leading those recommendations; and timelines for acting on and monitoring the implementation of those recommendations.

SUMMARY OF THE PERIODIC PROGRAM REVIEW OF INDUSTRIAL ENGINEERING

The Industrial Engineering program has an innovative curriculum with a focus on hands-on experience. It has a dedicated faculty body with an interest in the continuous improvement of the curriculum and its delivery. The faculty is extensively engaged in scholarly, research, and creative (SRC) activities. The Industrial Engineering program currently has one Tier 2 CRC chair, and one fellow of the Canadian Academy of Engineering.

This document comprises The Faculty of Engineering and Architectural Science's Dean's response to the Peer Review Team (PRT) Report and the School's response, in accordance with the directions of the 2018 and 2022 Periodic Program Review (PPR) Manual and with Section 8.2 of Senate Policy 126, Periodic Program Review of Graduate and Undergraduate Programs. The site visit by the external PRT for the Periodic Program Review was carried out between November 18 and 18, 2024. The School of Industrial Engineering submitted a list of potential Peer Review Team (PRT) candidates to the Office of the Dean, who then selected

Dr. Ali Akgunduz, Professor, Mechanical, Industrial and Aerospace Engineering, Concordia University
Dr. Samir Elhedhli, Professor, Department of Management Sciences, University of Waterloo

The PRT found the Industrial Engineering program to be delivering high quality education to undergraduate students while generating top research outcomes. Interviews with alumni revealed that graduates highly value their education at TMU and feel a strong sense of belonging to the university. Furthermore, the quality of the core faculty is exceptionally strong, and comprises many highly accomplished researchers. The curriculum is well-rounded and covers most essential skills in Industrial

engineering, comparing favourably with programs in Canada and internationally. However, while the program's common first two years with Mechanical Engineering provides its students with a strong understanding of traditional manufacturing engineering, it also delays the students' introduction to core Industrial Engineering concepts. As a result, students are challenged to learn all the traditional Industrial Engineering topics within their final two years. The delay in introduction to Industrial Engineering concepts, also has an impact on program identity. Industrial Engineering, compared to other engineering disciplines, is less widely understood. Students only develop a clear understanding of the field's focus and scope by their third year. As a result, their professional identity as Industrial Engineers is often not fully established until the final two years of the program.

The PRT Report offered the following five critical recommendations, and the School has responded thoughtfully to each to generate their Implementation Plan. The Dean's Office is in full support of the School's responses to the PRT recommendations.

The School of Industrial Engineering has submitted its response to the PRT report to the Dean of the Faculty of Engineering and Architectural Sciences, to which the Dean responded on December 11, 2024.

The Academic Standards Committee completed its assessment of the School of Industrial Engineering on March 6, 2025. The Committee indicated that a thorough, analytical and self-critical program review was conducted. The program provided a detailed plan for future growth and support for development.

The Academic Standards Committee recommends that the program continue, as well as provide a one-year follow-up report as follows:

The mandated One-Year Follow-up Report be submitted by June 30, 2026 to include:

1. **An update on the Implementation Plan**
2. **A progress report on the program's current periodic program review cycle**

Presented to Senate for Approval: March 25, 2025

Start date of next Periodic Program Review: 2024/25

SUMMARY OF THE REVIEWERS' RECOMMENDATIONS WITH THE PROGRAM'S AND DEAN'S RESPONSES

RECOMMENDATION ONE: Curriculum Changes and Program Identity
While the reviewers understand the department's motivation to offer a common first two years for Industrial and Mechanical Engineering students, the current curriculum does not adequately address the unique needs of Industrial Engineering students.

Industrial Engineering, compared to other engineering disciplines, is less widely understood. Most students only develop a clear understanding of the field's focus and scope by their third year. As a result, their professional identity as Industrial Engineers is often not fully established until the final two years of the program. This delay creates challenges, particularly for students seeking to join the Co-Op program after their second year. At this stage, they typically lack sufficient exposure to key Industrial Engineering

concepts and struggle to identify the types of roles they are prepared for, as foundational courses in Industrial Engineering are only introduced in the third year.

To address these concerns and enhance the curriculum, the reviewers recommend the following changes:

1. Introduce an introductory course in the first year: Create a course titled Introduction to Industrial Engineering, to be offered in the second term of the first year. This course should provide an overview of Industrial Engineering topics and their applications in industry and government, helping students understand the scope and relevance of the field early in their academic journey. Another resource-neutral alternative that does not necessitate a new course is to make room in CEN 100: Introduction to Engineering to introduce IE tools and application areas.
2. Restructure second-year course offerings: Move courses such as EES 512, MEC 309, and MECH 323 to the third year. In their place, introduce foundational Industrial Engineering courses such as Operations Research I (OR I), Operations Research II (OR II), and Work Measurement, Analysis, and Design or Introduction to Management. This change will provide students with a stronger Industrial Engineering foundation earlier in the program.
3. Incorporate advanced and contemporary applications in the third year: Include a course that allows students to apply their Industrial Engineering knowledge and tools to solve complex problems, reinforcing their skills in practical and meaningful ways. This could also focus on data-driven modelling, analysis and design and could complement the Data analytics component of the curriculum.

These changes aim to provide students with a clearer understanding of Industrial Engineering from the outset, enabling them to build a stronger professional identity and better prepare for career opportunities in the field.

PROGRAM RESPONSE:

1. IE tools and application areas are currently introduced in CEN 100: Instruction to Engineering. More IE tools will be included in the course besides the application areas in the lecture.
2. The IE program plans to restructure courses offered in the second year to introduce at least one Industrial engineering course in the second year.
3. The MIME department wishes to keep the first- and second-year courses common to both industrial and mechanical engineering programs. However, restructuring the second-year courses and moving at least one course from the third to the second year will create space to offer a course that will be explored.

DEAN'S RESPONSE:

The industrial engineering program plans to restructure courses offered in the second year to introduce at least one industrial engineering focused course in the second year.

RECOMMENDATION TWO: Data Analytics/AI/Data Science in the curriculum.

There is no doubt that Data Analytics, Data Science and Artificial Intelligence (AI) are impacting a wide variety of industries by improving efficiency and enabling better decision making. This is at the core of Industrial Engineering and should be organically integrated in any IE curriculum. The IE program at TMU took serious steps in this direction by including three courses: two required (IND 405 Introduction to Data Science and Analytics; IND 708 Information Systems) and one elective (IND 719 Big Data Analytics

Tools)

The course descriptions, however, do not reflect a clear coherence between the three courses and certain topics may seem less relevant to industrial engineering. The reviewers suggest the following:

1. The introduction of DA/DS/AI tools should be from an IE perspective with relevant examples and context. Case studies and data sets related to IE would greatly enhance the curriculum.
2. The two required courses should be designed in an integrated manner as is the case in Operations Research 1 and Operations Research 2. Relevant topics could include those already in IND 405 but should include others such as decision trees, random forest, support vector machines, and more data visualization (as pointed out by an alum).
3. Elective courses, currently limited to 1, should be extended. A second course on the Application of Data analytics in IE where representative problems from key application areas are tackled using descriptive, predictive and prescriptive analytics with ample introduction to software tools such as Tableau, R, and Python. Examples could be from supply chain, healthcare, or finance.
4. Some existing courses should increase their content of DA/DS/AI. For example, production and inventory planning and operations management could have a substantial component dedicated to Time Series forecasting.
5. There seems to be an appetite for an AI option , either within engineering or across engineering and science, with courses offered from different units including MIME. This would enrich the set of elective courses for IE.

PROGRAM RESPONSE:

1. In Fall 2024, the program revised the course content of IND 708 Information System from an IE perspective with relevant context, including the term project, data visualization, and data sets.
2. When the program introduces a new required course in DA/DS/AI, we will consider streamlining the course contents of all three required courses, including content on decision trees, random forests, and support vector machines.
3. The program revised the IND 405 Introduction to Data Sciences and Analytics course to emphasize the programming language Python. The program welcomes the suggestion to revisit the course contents of the three required courses and the elective course. Additional elective courses in DA/DS/DI will be considered.
4. The IND 710 Production and Inventory Systems course examines forecasting techniques. The course term project can be reframed to include Time Series Forecasting using DA/DS/AI.
5. As noted in the report, the Dean's office has started an initiative with all the programs to introduce an AI option.

DEAN'S RESPONSE:

The industrial engineering program has been active in revising the curriculum in terms of AI and Data Science with several recent initiatives that are ongoing.

RECOMMENDATION THREE: Co-Op Eligibility Criteria

By the end of their second year, students often lack a solid understanding of Industrial Engineering principles. As a result, when selecting their Co-Op placements, they are unclear about the types of roles that would best align with their future as Industrial Engineers.

Some students are unable to complete all their second-year courses on time, which occasionally disqualifies them from participating in the Co-Op program. Consideration could be given to relaxing the eligibility criteria to enable more students to participate.

Additionally, a greater investment in the Co-Op program is essential. Both students and faculty members recognize the significant role Co-Op plays in training future engineers. However, there are concerns regarding the management and placement of students. To address these, the department may need to allocate more resources and intensify efforts to engage alumni and industry partners. These measures would help the program better meet its objectives and provide enhanced opportunities for students.

PROGRAM RESPONSE:
The CEN 100 Introduction to Engineering course addresses the tools and application areas of Industrial Engineering. And the MEC 325 Introduction to Engineering Design course also addresses aspects of engineering design. Addressing Recommendation 1 will also help introduce the Industrial Engineering course in the second year.

Students take Co-Op after completing third-year courses. In the past, students must have completed all first, second, and third-year courses to take Co-Op positions. Recently, Co-Op eligibility has been revised to permit the participation of students with outstanding third-year courses.

Co-op placement is centralized at the Dean's office through the Co-Op Office. The Co-Op office engages industrial partners and alumni. As suggested by the visitors, the department shall continue to work with the Co-Op office on further improvements and enhancements, including the engagement of alumni and industrial partners.

DEAN'S RESPONSE:
Co-Op eligibility has been revised to permit the participation of students with outstanding third-year courses and further improvements, enhancements, and industrial partner collaboration in tandem with the central FEAS co-op office are ongoing.

RECOMMENDATION FOUR: Foundational Courses taught from an Engineering Perspective
Engineering programs commonly collaborate with departments such as Mathematics, Physics, and Chemistry to offer foundational math and science courses. However, at many universities, more advanced topics are typically taught by engineering faculty. Courses like Engineering Economics, Differential Equations, and Numerical Analysis are better suited to being taught within the Faculty of Engineering to ensure relevance and contextualization.

To help students appreciate the material in these courses, examples must be relatable to their specific field of study. At some institutions, not only are these courses taught by engineering faculty, but they are also tailored to individual programs or clusters of related disciplines. For instance, examples used for Electrical and Computer Engineering students often differ significantly from those relevant to Civil or Industrial Engineering students.

Without program-specific examples, students may struggle to grasp the material and, more concerningly, develop a negative perception of these subjects. Based on this observation, the program reviewers recommend that the following courses be transferred to the Faculty of Engineering and Architectural Science for improved alignment and effectiveness. We realize that this may have resource and financial implications.

- ECN801 Principles of Engineering Economics

- MTH425 Differential Equations and Vector Calculus
- MTH510 Numerical Analysis
- MTH 410 Statistics

PROGRAM RESPONSE:
The program shares the view of the visitors on the teaching of advanced topics in Mathematics, Physics, and Chemistry by engineering faculty to provide germane contexts and applications. It is expected that a better understanding of these subjects will reflect positively in the overall experience of students in upper year engineering courses.

The Dean is currently discussing with the departments providing service courses related to mathematics about the process for transferring the affected courses to FEAS. It is expected that the established process will be the basis for the gradual transfer of other relevant courses.

DEAN'S RESPONSE:
Currently, there are discussions with stakeholders to have certain math courses return to FEAS to be taught by respective departments with a concerted focus on applications and design. It is expected that the established process will be the basis for the gradual transfer of other relevant courses.

RECOMMENDATION FIVE: TA compensation
Faculty members have noted that the workload assigned to TAs often exceeds the hours for which they are hired. As a result, some faculty members are unable to utilize TAs to their full potential. To improve the quality of TA support and align more closely with practices at other institutions, the university should consider increasing flexibility in the number of hours allocated to each TA. This adjustment would allow for higher compensation for TAs while enabling course instructors to assign more responsibilities, ultimately enhancing the overall effectiveness of TA contributions.

PROGRAM RESPONSE:
The number of teaching assistants' hours and their compensation involve different stakeholders such as CUPE Local 3904, Unit 3 contract, human resources, and the faculty. The current norm for the hours and compensation is applied throughout the TMU as agreed by the Collective Agreement with the university. The program shall communicate the observation and suggestion to the human resources office.

DEAN'S RESPONSE:
TA/GA compensation is governed and outlined by different stakeholders such as CUPE Local 3904, Unit 3 contract, human resources, and the faculty. The current norm for the hours and compensation is applied throughout TMU as agreed by the Collective Agreement with the university. Any changes would have to be part of future collective agreements.

IMPLEMENTATION PLAN: INDUSTRIAL ENGINEERING

Priority Recommendation #1: Review CEN100: Introduction to Engineering and update with IE tools and application areas OR create a new first-year course: Introduction to Industrial Engineering
Rationale: - As recommended by the PRT (Rec #1.1), since Industrial Engineering (IE) is less widely understood, IE students need to be exposed to the field in their first year. The PRT suggests that the program create a course titled Introduction to Industrial Engineering to be offered in

the second term of the first year. This course should provide an overview of Industrial Engineering topics and their applications in industry and government, helping students understand the scope and relevance of the field early in their academic journey. Another resource-neutral alternative that does not require a new course is making room in CEN 100: Introduction to Engineering to introduce IE tools and application areas.

Implementation Actions:

- Review CEN100 to identify whether changes could be made to include relevant information on IE tools and application areas.
    - The Dean's office manages and offers the CEN 100 course to all first-year engineering students.
    - The Industrial Engineering Program is given 3 hours during the semester (one hour per section and a total of three sections) to introduce Industrial Engineering.
    - The Industrial Engineering Program Committee (IPC) will review the current content introducing industrial engineering to first-year students.
    - IPC will look into possible updates in the content to accommodate the feedback from the PRT
- If updating CEN100 is not possible, develop a new course: Introduction to Industrial Engineering and identify how/where it would be implemented in the curriculum (e.g. as replacement or addition - likely Category 2 Minor Modification).
    - Consult with VPA, Curriculum Management: Curriculum Advising and Undergraduate Calendar Publications to identify planned integration options.
    - Develop new course
    - Submit modification proposal
    - Review and approval by Faculty Council, Dean

Timeline:

Form committee (Winter 2025);
Review and recommendation (Fall 2025)

Responsibility for:

a) leading initiative: Associate Chair, Department Chair

b) **approving recommendations, providing resources, and overall monitoring:** Department Chair, Curriculum Committee, Department Council

Implementation: Associate Chair, Department Chair, Curriculum Committee

Resources: Dean

Approvals: Dean

Priority Recommendation #2: Restructure second-year course offerings to incorporate foundational IE earlier

Rationale:

- As recommended by the PRT (Rec #1.2), introducing IE courses in the second year enhances the IE foundation earlier in the program. The PRT recommends moving courses such as EES 512, MEC 309, and MECH 323 to the third year. In their place, introduce foundational Industrial Engineering courses such as Operations Research I (OR I), Operations Research II (OR II), and Work Measurement, Analysis, and Design or Introduction to Management. This change will give students a stronger Industrial Engineering foundation earlier in the program.

Implementation Actions:

- Review the structure of second-year course offerings and identify how best to scaffold learning across 2nd and 3rd-year courses.

- Consult with VPA, Curriculum Management: Curriculum Advising and Undergraduate Calendar Publications to identify planned repositioning
- Review courses and identify course updates, as required with new position
- Submit modification proposal
- Review and approval by the IPC, Department Council, Dean, ASC

Timeline:
Form committee (Winter 2025);
Review and recommendation (Fall 2025)

Responsibility for:
a) **leading initiative:** Associate Chair, Department Chair
b) **approving recommendations, providing resources, and overall monitoring:** Department Chair, Curriculum Committee, Department Council
Implementation: Associate Chair, Department Chair, Curriculum Committee
Resources: Dean
Approvals: Dean

Priority Recommendation #3: Incorporate advanced and contemporary applications in the third year

Rationale:

- As recommended by the PRT (Rec #1.3), the PRT recommends including a course that allows students to apply their Industrial Engineering knowledge and tools to solve complex problems, reinforcing their skills in practical and meaningful ways. This could also focus on data-driven modelling, analysis and design and could complement the Data analytics component of the curriculum.

Implementation Actions:

- Review 3rd year courses to identify potential areas for integration.
- Revise current course(s) or develop a new course, then identify how/where it would be implemented in the curriculum (e.g., as replacement or addition - likely Category 2 Minor Modification)
  - Consult with VPA, Curriculum Management: Curriculum Advising and Undergraduate Calendar Publications to identify planned repositioning
  - Review courses and identify course updates, as required with the new position
  - Submit modification proposal
  - Review and approval by IPC, Department Council, Dean, ASC

Timeline:
Form committee (Winter 2025);
Review and recommendation (Fall 2025)

Responsibility for:
a) **leading initiative:** Associate Chair, Department Chair
b) **approving recommendations, providing resources, and overall monitoring:** Department Chair, Curriculum Committee, Department Council
Implementation: Associate Chair, Department Chair, Curriculum Committee
Resources: Dean
Approvals: Dean

Priority Recommendation #4: Enhance the curriculum content in the areas of Data Analytics/AI/Data Science

Rationale:

- As recommended by the PRT (Rec #2) and identified in the self-study (Rec #5 and 6). There is no doubt that Data Analytics (DA), Data Science (DS), and Artificial Intelligence (AI) are impacting a wide variety of industries by improving efficiency and enabling better decision-making. This is at the core of Industrial Engineering and should be organically integrated into any IE curriculum. The IE program took serious steps in this direction by including two required courses (IND 405 Introduction to Data Science and Analytics, IND 708 Information Systems) and one elective (IND 719 Big Data Analytics Tools). The course descriptions, however, do not reflect a clear coherence among the three courses, and certain topics may seem less relevant to industrial engineering. PRT recommends streamlining the contents of both required courses from an IE perspective, adding content such as decision trees, random forests, support vector machines, and more data visualization, enhancing the applications of DA/DS/AI in other courses, and introducing a second-year elective course in DA/DS/AI.

Implementation Actions:

- 1. IPC will devise a plan to integrate the contents of the IND 405 and IND 708 courses systematically and identify and include the missing areas of DA/DS/AI that must be covered at the undergraduate level (Category 1 Minor Modification).
- 2. IPC will develop a new introductory DA/DS/AI course that can be offered in the second or third year of the program, focusing on representative problems from key application areas tackled using descriptive, predictive and prescriptive analytics with an introduction to software tools such as Tableau, R, and Python. Examples could be from the supply chain, healthcare, or finance (Category 2 Minor Modification).
- 3. IPC will look into other existing IE courses and possible avenues to increase the application of DA/DS/AI (Category 1 Minor Modification).
- Consult with VPA, Curriculum Management: Curriculum Advising and Undergraduate Calendar Publications to identify planned integration options.
- Streamline the course contents with respect to 1
- Develop a new course with respect to 2
- Revise the applications with respect to 3
- Submit modification proposal
- Review and approval by IPC, Department Council, Dean, ASC

Timeline:

- Form the committee in the Winter of 2025
- Streamlining the data analytics course contents in Spring/Summer, and Fall 2025
- A course outline will be proposed in Fall 2025
- The new course will be developed in Winter 2026
- Applications of DA/DS/AI will be proposed in Winter 2026

Responsibility for:

a) **leading initiative:** Associate Chair, Department Chair

b) **approving recommendations, providing resources, and overall monitoring:** Curriculum Committee, Department Council

Implementation: Associate Chair, Department Chair

Resources: Dean

Toronto Metropolitan University

Approvals: Dean

Priority Recommendation #5: Foundational Courses taught from an Engineering Perspective

Rationale:

- As recommended by the PRT (Rec #4), engineering programs commonly collaborate with departments such as Mathematics, Physics, and Chemistry to offer foundational math and science courses. However, engineering faculty typically teach more advanced topics at many universities. Courses like Engineering Economics, Differential Equations, and Numerical Analysis are better suited to be taught within the Faculty of Engineering to ensure relevance and contextualization. It helps students appreciate the material in these courses, and examples must relate to their field of study. Without program-specific examples, students may struggle to grasp the material and, more concerningly, develop a negative perception of these subjects.

Implementation Actions:

- The Dean has initiated discussions with departments offering those service courses and is in the decision-making process of gradually transferring those to FEAS.
- Once the courses are identified and allocated to the department, IPC will involve and revise the course contents and examples related to the fields (Category 1 Minor Modification).
- Submit modification proposal
- Review and approval by IPC, Department Council, Dean, ASC

Timeline: 1-5 years.

Responsibility for:

a) **Leading initiative:** Dean

b) **Approving recommendations, providing resources, and overall monitoring:** Dean

Implementation: Dean, Department Chair

Resources: Dean

Approvals: Dean

Priority Recommendation #6: Increase the number of TFA to 13 (by 1 total) dedicated Industrial Engineering Faculty

Rationale:

- Identified in the self-study (Rec #1). This is necessary to preserve and improve the quality of educational experiences as class sizes and student-to-faculty ratios have grown. The hiring process should also be governed by the principles of equity, diversity, and inclusivity (Rec #3). The faculty composition is not reflective of the community of demographics as per the diversity survey by the office of the Vice-President Equity, Community, and Inclusion. The program will support and encourage hiring a female, indigenous, and black faculty.

Implementation Actions:

- The department will propose the requirement of hiring a female, Indigenous, and black faculty to the Dean and VPFA

Timeline: 1-3 years

Responsibility for:

a **leading initiative:** Department Chair, Dean

b **Approving recommendations:** Dean, VPFA

Resources: Dean, VPFA
Approvals: Dean, VPFA

Priority Recommendation# 7: Increase the enrollment of students who identify in any of the following three equity seeking groups: female, indigenous, and black students. A committee is currently tasked with this exercise.

Rationale:

- Identified in the self study (Rec #2). The student composition does not reflect the community demographics as per the diversity survey by the Vice-President Equity, Community, and Inclusion Office.

Implementation Actions:

- The MIME department/IE program will initiate the discussion with the Dean and Undergraduate Engineering Admissions and Recruitment office
- Investigate possible recruitment strategies, including targeting equity seeking groups by providing bursaries and allowances.

Timeline: 1-10 years

Responsibility for:
a leading initiative: Associate Chair, Department Chair
b Resources: Dean

Priority Recommendation #8: Improve engagement of students in labs by introducing more open-ended labs.

Rationale:

- Identified in the self study (Rec # 4). Our students will be better prepared to tackle open-ended, real-world problems by solving open-ended laboratory problems.

Implementation Actions:

- IPC will identify courses that inadequately have open-ended and real-world problems
- The focus of the laboratory (term project) will be revised to include that they are open-ended and real-world problems (Category 1 Minor Modification).

Timeline: 1-5 years

Responsibility for:
a leading initiative: Associate Chair, Department Chair
b Resources: Department Chair, Dean

Priority Recommendation #9: Re-evaluate processes for compliance with IQAP and develop new processes and strategies moving forward to ensure timely completion

Rationale:

- Due to the extremely late submission of the program's PPR. Intentional steps and strategies are required to ensure the current PPR is completed within the required timelines.

- The lateness of this PPR has meant that the final recommendations and conclusions were not as helpful and workable as they needed to be. Ensuring compliance with future PPR timelines will guarantee that future recommendations and implementation items are informed by current data and recommendations.

Implementation Actions:

- Create a PPR committee to engage with CQA and complete required PPR components, to ensure the PPR does not have a sole author
- Engage with the Curriculum Specialist regularly to ensure timely data collection and timeline milestone achievement
- Explore opportunities for continued data collection and program-led quality assurance processes (e.g., annual student surveys, student focus groups, graduate exit interviews/surveys, alumni engagement, etc.)
- Review program by-laws to integrate new processes or committees that engage with quality assurance processes

Timeline: 1 year

Responsibility for:

a **leading initiative:** Associate Chair, Department Chair

b **Resources:** Associate Chair, Department Chair, Associate Dean