UNIVERSITY OF SASKATCHEWAN

MEMORANDUM OF AGREEMENT

between the

DEPARTMENT OF CHEMICAL AND BIOLOGICAL ENGINEERING at the UNIVERSITY OF SASKATCHEWAN, CANADA

and the

DEPARTMENT OF CHEMICAL ENGINEERING at MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR, INDIA

for a

COLLABORATIVE DUAL DEGREE PH.D. PROGRAM

1. PARTIES TO THE AGREEMENT

This agreement is made between the Department of Chemical and Biological Engineering at the University of Saskatchewan, hereafter referred to as 'USask', and the Department of Chemical Engineering at Malaviya National Institute of Technology Jaipur, hereafter referred to as 'MNIT' on the following:

2. PURPOSE OF THE AGREEMENT

This Agreement identifies the terms and conditions, financial principles, and course offerings associated with the delivery of a collaborative Dual degree Ph.D. program.

3. PROGRAM DESCRIPTION

A dual degree Ph.D. is a dissertation-degree program involving work on a specific research project. The expected program duration is normally four (4) years. However, in this dual Ph.D. program, the time to completion may vary depending on individual student progress. At the University of Saskatchewan, the College of Graduate and Postdoctoral Studies (CGPS) allows a maximum of six years for completion. MNIT allows a maximum of seven years for completion.

The dual Ph.D. degree course requirements for the candidates should be as per the respective home institutions. This should satisfy a *minimum* of credit units of courses at the graduate level at each institution including the graduate Seminar, and a graduate level Ethics and Integrity course. The list of mandatory credit and non-credit courses and possible electives is available in Appendices 1 (USask) and 2 (MNIT). The Advisory Committee may determine that more courses are required if the student is lacking in the appropriate academic background. No undergraduate level courses are to be included in the minimum credit unit requirement.

The Program described in this agreement will consist of an offering of courses at both sites – MNIT and the USask. The course work at MNIT will be eligible for transfer of credits towards the Ph.D. in Chemical/Biological Engineering at the USask. Similarly, the course work at the USask will be eligible for transfer of credits towards a Ph.D. at MNIT.

3.1 USask students admitted to the Dual Degree Ph.D. program first enrol at USask. Within 12 months of their admission to USask, they are expected to have their first joint (advisory) committee meeting. Within 24 months of their admission to USask, they are expected to pass their Doctoral Candidacy Assessment.

As soon as possible they are expected to take required USask courses including GSR 960 - Introduction to Ethics and Integrity. Additional non-credit courses and online safety courses should be taken as needed (Appendix 1). Students should register in a minimum of six (6) credit units (c.u.) in their area of specialization as per the recommendation of their joint graduate committee. Students are expected to start their dissertation work during their first year. USask students will enrol at MNIT, upon arrival, and take the courses, if any, as suggested by the supervisory committee. The student will have annual joint committee meetings and will present their Research Progress Reports. The joint committee meeting (permission to write) will conduct a candidacy assessment/pre-synopsis in order to give permission to write a dissertation prior to the dissertation/thesis defence. Acceptance of at least two manuscripts as a first author in a refereed international journal is a requirement prior to the dissertation defence. The dissertation shall be written in English. Due to individual student progress, the nature of their research project, and the availability of required courses, there will be flexibility in the specified dates of enrolment at each institution, but the parties agree that over the course of the program of study, every student will spend approximately fifty percent (50%) of their time at each partner university.

Students, whose home institution is USask shall plan to enrol at MNIT according to the MNIT academic calendar, which is either the Autumn session (July-December) or Spring session (January-June).

3.2 MNIT students admitted to the Dual Ph.D. program enrol at MNIT and will take the required number of courses at MNIT as per Appendix 2 and will pass the Candidacy/Qualifying Exam within eighteen months of the student's admission to a Ph.D. program at MNIT. Students are expected to start their dissertation/thesis work during this time. Then, MNIT students will enrol at the USask upon arrival, and take the courses, if any, as suggested by the supervisory committee. The student will have annual joint committee meetings and will present their Research Progress Reports. The joint committee meeting (permission to write) will conduct a final scrutiny/pre-synopsis exam in order to give permission to write the dissertation prior to the dissertation defence. Acceptance of at least one manuscript in a refereed international journal and one international conference publication as a first author is a requirement prior to the dissertation submission. The dissertation shall be written in English. Due to individual student progress, the nature of their research project, and the availability of required courses, there will be flexibility in the specified dates of enrolment at each institution, but the parties agree that over the course of the program of study, every student will spend approximately fifty percent (50%) of their time at each partner university. MNIT students shall plan to enrol at USask in the Fall session (Sept. to December), Winter session (January to April) or Spring/Summer session (May to August) as per their convenience.

3.3 Students who have successfully completed the program and have met the requirements from both universities will be granted Ph.D. from USask as well as from MNIT.

4. COURSES

4.1 The USask courses listed in Appendix 1 have been assessed by MNIT and are considered eligible for credit unit transfer toward the requirements for the MNIT degree.

4.2 The MNIT courses listed in Appendix 2 have been assessed by the graduate committee in the Department of Chemical and Biological Engineering at USask and are considered eligible for credit unit transfer toward the requirements for the USask degree.

4.3 When course descriptions of either Party change, the revised description will be submitted in writing to the other Party and reviewed to determine if and how the revised course will be applied to the applicable degree program.

5. COMMITTEE COMPOSITION AND ROLE OF SUPERVISORS

5.1 The dissertation advisory committee/Doctoral Research Evaluation Committee (hereinafter referred to as 'DREC') for the Dual Degree Program is to be composed of supervisor(s) from USask and supervisor(s) from MNIT, plus two other members from each university, for a total of minimum six faculty members on the committee. The chair of the committee will be one of the faculty members from the

student's home institution. A Chair of the supervisory committee is typically appointed for the USask student. The supervisor from MNIT is the convenor of the DREC for MNIT student.

5.2 The supervisor(s) at each institution will be responsible for the student's supervision while the student is in residence at their respective universities. The supervisor(s) will recommend the composition of the Advisory/DREC Committee and, in consultation with the student, recommend a research topic and course requirements. It is the duty of the supervisor(s) to coordinate the student's program, to see that appropriate examinations are arranged and that regular meetings of the Advisory Committee/DREC and progress report submissions take place at least once per year for USask student and at least once every six months for MNIT students. Immediately after the enrolment of the student, the supervisors shall submit the program timeline including travel plans to USask and MNIT offices.

5.3 It is the responsibility of each party to notify the other party, should there be a pending change in the supervisor(s) at their institution.

5.4 The initial joint Advisory Committee/DREC will meet with the student within three months of the student's arrival and conduct a Dissertation progress meeting. Committee members not in residence at the location of the meeting will participate online using a web-based technology. This meeting is designed to evaluate the student's background and aid the Advisory Committee/DREC in establishing a suitable course program and a general area of research.

5.4.1 The supervisors will complete a Program of Studies, which includes the name of the research project, the committee membership and the list of courses required. This will be submitted to the Graduate Student Committee at USask for approval and CGPS at USask, and submitted to DREC and forwarded to the Dean Academic Affairs at MNIT for approval. A CGPS Student-Supervisor Agreement will also be completed by the student and supervisors at USask.

https://students.usask.ca/documents/graduate/student-supervisor-agreement.pdf

5.4.2 An annual written progress report will be provided by the student, orally presented to the joint advisory committee, and approved by the committee. The first report shall consist of the Full Dissertation/Research Proposal report and presentation.

5.5 Submission of the dissertation to the USask will follow the policies of the USask academic unit and the CGPS including the submission and approval of a research plan and dissertation proposal, and all ethics and risk management approvals. The doctoral thesis submitted by an applicant to the Dean of MNIT will be formally accepted after the Dean Academic confirms that the submitted documents/forms meet the requirements.

6. ASSESSMENTS AND EXAMINATIONS

6.1 **Ph.D. Candidacy/Comprehensive Exam:** This exam is taken to evaluate a student's background and to determine whether the student has the capability to proceed in a Ph.D. program. In this exam, the student is expected to answer general questions on all aspects of Chemical/Biological Engineering and more specific questions in the area of specialization.

6.1.1 At USask, there is a requirement for students to take a Doctoral Candidacy Assessment within 24 months of the student's admission to the USask PhD program. Students may be given one repeat chance to clear this exam.

6.1.2 At MNIT, the comprehensive/ candidacy exam will be held within 18 months of the student's admission to the MNIT Ph.D. program. The examination may be repeated once.

6.2 **Research Progress Meetings:** These meetings should be held once a year at USask and once every six months at MNIT to evaluate the research progress of the student.

6.3 **Ph.D. Candidacy Assessment/Pre-Synopsis (Pre-Synopsis Seminar):** All fully qualified Ph.D. students with home institutions of either USask or MNIT must take this assessment after completing all

coursework and just before obtaining permission to write the dissertation/thesis. It covers a broad aspect of the appropriate disciplines and is used as a means of judging whether or not the candidate has adequate knowledge in the field of research and topics cognate to the field of research and whether the candidate can apply this knowledge to problem solving.

6.3.1 At USask, the PhD Candidacy Assessment must be completed within twenty-four (24) months of initial registration. For students that transfer from a master's to a doctoral program, the assessment must be completed within thirty-six (36 months) of initial registration.

6.3.2 At MNIT, the Comprehensive Examination must be completed within eighteen (18) months of initial registration to the Ph.D. program.

This assessment will take place before the Ph.D. dissertation/thesis submission. It may be repeated once with the permission of the student's joint dissertation advisory committee/student research committee.

6.4 **Ph.D. Dissertation/Thesis Defence** - Once the Committee has determined the dissertation/thesis is ready for the final defence examination, submission of the dissertation/thesis will follow the policies of the student's home institution (the location where the student holds primary residence and normally begins their program). For example, at USask, it shall be the policies of the USask academic unit and the CGPS, including the submission and approval of a research plan and dissertation proposal, and all ethics and risk management approvals that are followed. At MNIT, the student should follow the policies set by the Department of Chemical Engineering and MNIT. The defence will include a 40-50-minute seminar by the candidate and will be immediately followed by an oral examination at MNIT. At USask, the defence will include approximately 40-45 minute presentation followed by an oral exam. The final approved dissertation will be archived at both institutions.

6.4.1 The Examining Committee including external examiner(s) as per the norm of home institution.

6.4.2 The external examiner(s) will be appointed by MNIT and USask, in accordance with the policies of the home institution.

6.4.3 The Examining Committee, including the University Examiner, will rule on whether the dissertation is satisfactory in form and content, and on whether the candidate's defence of the dissertation was satisfactory. Defence may occur in-person on-campus; remotely through digital platforms; or by a combination of both.

7. ADMISSIONS PROCESS

7.1. Students must apply individually to USask to be admitted to USask and meet all the application requirements and pay the posted application fee, in order to be considered for admission. Students must apply individually to the MNIT, meet all application requirements and pay the prescribed application fee, in order to be considered for admission at MNIT.

7.2. Students admitted to the Dual Ph.D. Program must meet the admission requirements of both institutions and departments in terms of the eligibility criteria.

Students will be admitted to the USask College of Graduate and Postdoctoral Studies (CGPS) only upon the recommendation of the Department of Chemical and Biological Engineering. Recommendations are based on the evaluation of academic ability, availability of an appropriate supervisor, and establishment of suitable financial arrangements. To be admitted to a Ph.D. program, the student must have a qualifying degree as prescribed by USask.

Students will be admitted to MNIT only upon the recommendation of the Department of Chemical Engineering. Recommendations are based on the evaluation of academic ability, availability of an appropriate supervisor, and establishment of suitable financial arrangements. To be ad mitted to a Ph.D. program, the student must meet the prescribed eligibility requirements of the MNIT Department of Chemical Engineering.

8. FINANCIAL PRINCIPLES

8.1 Students shall pay the required application fees associated with the application process for both their application to the USask and their application to MNIT, at the time of their respective application.

8.2 Students shall pay their own tuition to each institution for at least two (2) years. International students shall pay tuition at the posted rates for international students. Students must be registered (paying student fees) from the time of their first registration at the USask until completion of their degree requirements.

Students must maintain continuous registration at USask after their first registration in a graduate program. After a student has registered at USask and when they are pursuing studies as part of the dual-degree program at MNIT, they will be registered in a non-tuition bearing placeholder course (MSTA 003) at the USask and assessed student fees. This will allow these students to maintain their active USask registration and will relieve them from having to pay tuition to both institutions concurrently. Dual degree students must be registered in their 996 course and pay assessed tuition in the term in which their defence is held. USask student fees will continue to be assessed for all students after their first registration at USask, regardless of physical location of attendance. All students are expected to pay tuition to each institution for half of the duration of the dual degree program, while they are physically attending those institutions.

8.3 USask students will be entitled to any and all benefits generally accorded to MNIT students while registered and attending MNIT. This includes but is not limited to access to libraries and recreational facilities, and basic coverage of health and dental insurance.

8.4 MNIT students will be entitled to any and all benefits generally provided to USask graduate students while registered, paying tuition fees and attending the USask. This includes, but is not limited to, access to libraries and recreational facilities, provincial health benefits, and supplementary health and dental benefits through the Graduate Students' Association. For financial aid and scholarship eligibility, see section 8.9 and 8.10.

8.5 It is the responsibility of MNIT students to pay all of their own living and accommodation expenses while in Canada. The International Student and Study Abroad Center (ISSAC) at USask will provide information and assistance to the students regarding accommodation, orientation to the campus, and other matters applicable to international students.

8.6 It is the responsibility of USask students to pay all of their own living and accommodation expenses while attending MNIT. MNIT will provide information and assistance to the students regarding accommodation, orientation to the campus, and other matters applicable to international students.

8.7 All participating students are required to maintain insurance coverage, particularly health and accident insurance for the time spent abroad. All outbound USask participating students must comply with the Policy on International Travel Risk Management for Student Mobility including registering with the International Travel Registry (ITR).

8.8 All PhD students while registered and paying tuition at USask, must be provided with the minimum level of funding in accordance with the policies of the academic unit and the CGPS. Each Party is responsible for ensuring the appropriate financial aid for their own students.

Refer to the following webpage for current information on minimum levels of funding at USask:

https://grad.usask.ca/programs/chemical-engineering.php

8.9 Both MNIT and USask students are eligible to apply for and receive scholarships, fellowships and assistantship supports offered by MNIT and USask, where applicable.

For current information on scholarships and awards from the Department of Chemical and Biological Engineering:

https://grad.usask.ca/programs/chemical-engineering.php

For current information on scholarships and awards from the College of Graduate and Postdoctoral Studies:

https://cgps.usask.ca/funding

8.10 Neither Party will incur any financial obligations resulting from the actions of the other Party without a prior agreement in writing to accept specific financial obligations. Any additional agreement pertaining to financial matters will be negotiated separately and will be based upon the availability of funds for each Party.

9. APPLICABLE LAW AND JURISDICTION

9.1 This agreement shall be interpreted in accordance with any applicable agreements between Canada and India as well as the law of the Province of Saskatchewan.

9.2 The Parties agree to submit to the law of their respective countries and generally agree upon standards of international practice for resolution of all disputes arising under this agreement.

9.3 Subject to applicable Canadian, provincial, and USask regulations governing student privacy rights, the Program Coordinator at USask will keep the Program Coordinator at MNIT informed of students' progress while students are attending the USask.

9.4 Subject to all Saskatchewan's applicable rules, regulations and graduation criteria, MNIT students who successfully meet academic requirements will be eligible to receive a Ph.D. in Chemical/Biological Engineering from the USask. Subject to all of India's applicable rules, regulations and graduation criteria, USask students who successfully meet academic requirements will be eligible to receive a Ph.D. in Chemical Engineering from MNIT.

9.5 The decision to award, or not award, the degree by one institution will not be held binding upon the partner institution.

9.6 The transcript from USask will state "Dual Degree Ph.D. Program in Chemical/Biological Engineering, in partnership with Malaviya National Institute of Technology Jaipur (India)".

The parchment from USask will state "Doctor of Philosophy in Chemical/Biological Engineering from the University of Saskatchewan".

9.7 The transcript and parchment from MNIT will state "Malaviya National Institute of Technology Jaipur in collaboration with the University of Saskatchewan".

10. AGREEMENT TERMS

10.1 This agreement will take effect on the date of final signature and remain in effect for a period of 5 years, which may be further extended with the mutual consent of both parties.

10.2 This agreement may be terminated by either party with six months written notice. Should this agreement be terminated, students already admitted under the program will be able to continue their program of study until completion.

10.3 Any notice or change in connection with this Agreement shall be in writing by an authorized officer of the relevant Party and sent by email to the recipient party. Any addendum derived from this Agreement shall obey the same dates established herein.

10.4 Any notice or change related to a specific course shall be in writing to the Program Coordinator of the relevant Party sent by registered post to the recipient party.

10.5 The parties may, by mutual agreement, revise the terms of the agreement and any attachments, and negotiate changes during the term of its operation, with all changes being agreed to in writing.

10.6 This agreement is executed in duplicate in English. Each University will keep one of the duplicates.

11. INTELLECTUAL PROPERTY

MNIT and USask agree to respect each other's rights to intellectual property. Further, the Intellectual Property Rights (IPRs) that arise as a result of any collaborative research or activity under this MoA will be worked out on a case-to-case basis and will be consistent with official IPR policies of the two institutions.

---Signatures on the following page---

UNIVERSITY OF SASKATCHEWAN

AUTHORIZED SIGNATURES

On behalf of the University of Saskatchewan:

Baljit Singh

Dr. Baljit Singh
Vice President Research

Date: October 29/2025

Michael Bradley

Dr. Michael Bradley
Dean, College of Engineering

Date: 29 October 2025

Patricia McDougall

Dr. Patti McDougall
Interim Provost and Vice President Academic

Date: December 8/25

Dr. Julian Demkiw
University Secretary and Chief Governance Officer

Date: Dec 16/25

On behalf of Malaviya National Institute of Technology Jaipur:

N P Varad

Dr. N.P. Padhy
Director

Date: 29/10/'25

Date: 29/10/25

UNIVERSITY OF SASKATCHEWAN

APPENDIX 1 – COURSE LISTING

DEPARTMENT OF CHEMICAL AND BIOLOGICAL ENGINEERING, UNIVERSITY OF SASKATCHEWAN

A) NON-CREDIT MANDATORY COURSES

CHE/CBE 990.0 - Seminar

- *ALL* graduate students are expected to attend all graduate student seminars. Each Ph.D. student will present three seminars during the course of their graduate program. Graduate students are required to register in the graduate Seminar Course, CHE/CBE 990. Two seminars are presented for this course. The first seminar will be on a literature review directly related to the student's area of research, while the second seminar will consist of the research. The third seminar to be given is a requirement of the actual Ph.D. dissertation defence.

CHE/CBE 996.0 - Research – Dissertation

- Students writing a Ph.D. dissertation must register for this course.

GPS 960.0 - Introduction to Ethics and Integrity

- The GPS 960, Introduction to Ethics and Integrity Course, is a mandatory, on-line ethics course for ***ALL*** first- year graduate students and must be successfully completed in the ***FIRST*** term. The purpose of this course is to discuss ethical issues that graduate students face during their time at the University. All students will complete modules dealing with integrity and scholarships, graduate student-supervisor relationships, conflict of interest, conflict resolution and intellectual property and credit. The course will be included on the student's Program of Studies and on the student's academic record. This is an internet-based course and students register through Personalized Access to Web Services (PAWS). The Course Reference Number (CRN) is listed under the subject menu on the Course Offerings Search page as Graduate and Postdoctoral Studies. Deadlines to register are the same as for all other courses.

B) NON-CREDIT OPTIONAL COURSES

GPS 981.0 - Academic Preparation for International Graduate Students

- This course prepares international graduate students for the Canadian academic environment. Students will learn techniques for improving listening and note-taking skills; managing their reading loads; sharpening critical thinking; and conducting and managing research. Students will also learn about the role of supervisors, professors, and graduate chairs, and will gain practical instruction in academic integrity. Students will receive intensive academic writing instruction via lecture, assignments, detailed feedback, and one-to-one support.

GPS 984.0 - Thinking Critically: Professional Skills for Global Citizens

- Designed for graduate students to think globally and enhance their critical thinking skills through multidisciplinary activities and discussions. This course explores how factors such as culture or personality influence the ways we think, interact with, and relate to the world.

GPS 989.0 - Introduction to University Teaching

- Designed for graduate students preparing to teach. Students are introduced to instructional approaches that may be applied beyond the university classroom.

Course information may be found here: https://catalogue.usask.ca/?subj_code=GPS&cnum=.

C) FOR-CREDIT ELECTIVE COURSES

Twelve (12) credit units (four courses at the 800 level) must be selected from the following:

Chemical Engineering (CHE)

CHE 811.3: Principles and Applications of Heterogeneous Catalysis
CHE 861.3: Fundamental Biochemical Engineering
CHE 868.3: Advanced Downstream Bioprocessing
CHE 869.3: Advanced Mineral Processing
CHE 875.3: Reaction Kinetics and Reactor Design
CHE 881.3: Process Engineering
CHE 882.3: Design of Industrial Waste Treatment Systems
CHE 886.3: Transport Phenomena for Chemical Engineers
CHE 888.3: Chemicals and Energy from Renewable Resources
CHE 889.3: Catalysis and Environmental Studies with Synchrotron Radiation
CHE 898.3: Special Topics

Course information may be found here: https://catalogue.usask.ca/?subj_code=CHE&cnum=8%25

Biological Engineering (BLE)

BLE 811.3: Modelling of Food and Bioprocesses
BLE 840.3: Building Science
BLE 850.3: Post Harvest Technology
BLE 855.3: Biomaterial Processing and Analytical Methods
BLE 898.3: Special Topics

Course information may be found here: https://catalogue.usask.ca/?subj_code=BLE&cnum=8%25

UNIVERSITY OF SASKATCHEWAN

APPENDIX 2 – COURSE LISTING

DEPARTMENT OF CHEMICAL ENGINEERING, MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR

A) COMPULSORY COURSE:

MET - Research Methodology

B) ELECTIVE COURSES:

CHT-601 Transport Phenomena

CHT-602 Mathematical Methods in Chemical Engineering

CHT-603 Chemical Reactor Analysis

CHT-604 Modelling and Simulation

CHT-605 Chemical Engineering Thermodynamics

CHT-606 Advanced Separation Processes

CHT-607 Computational Methods in Chemical Engineering

CHT-608 Advanced Process Control

CHT-609 Pollution Control System

CHT-610 Optimization of Chemical Process

CHT-611 Process Modification for Green Technology and Energy Integration

CHT-612 Catalyst Theory and Practice E Theory

CHT-613 Petroleum Refining Engineering

CHT-614 Chemical Process Safety and Management

CHT-615 Bioprocess Engineering E Theory

CHT-616 Advanced Mass Transfer

CHT-617 Introduction to Soft Matter

For more details, visit: https://www.mnit.ac.in/dept_chemical/academics