**RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY**

**DIRECTION NO. 14 OF 2015**

**FACULTY OF ENGINEERING AND TECHNOLOGY**

**DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF POST GRADUATE DIPLOMA IN INDUSTRIAL ROBOTICS (PGDIR)**

1. There shall be TWO examinations leading to the degree of Post Graduate Diploma in Industrial Robotics (PGDIR) namely :
   1. the Post Graduate Diploma in Industrial Robotics (PGDIR) Semester-I Examination,
   2. the Post Graduate Diploma in Industrial Robotics (PGDIR) Semester-II Examination,
2. The duration of the Post Graduate Diploma Course under this shall be of one academic year. The PGDIR Semester-I Examination at the end of the first Semester and PGDIR Semester-II Examination at the end of the Second Semester.
3. The Examinations Specified in paragraph 2 above shall be held twice a year (Winter + Summer) at such places and on such dates as may be fixed by the University under the administrative control of Board of Studies in Mechanical Engineering.
4. The details of the procedure for admission as well as eligibility for examination of :
   * 1. An applicant of the **PGDIR Semester** **–** **I** Examination shall have :

The applicants should have passed B.E.( Mechanical or allied, Electronics or allied, Electrical or allied, Computer Science or allied), B.Sc (IT,Electronics or CS, BCA or MCA or any other degree at under graduate level with Physics and Mathematics as Compulsory subjects of this University or an equivalent Bachelor Degree of any statutory University in India and Abroad.

* + 1. An applicant of the **PGDIR Semester II** Examination shall have :

Appeared PGDIR Semester– I Examination of this University. As given in Table-I

**Table-I**

|  |  |  |
| --- | --- | --- |
| **Admission to** | **Candidate should have** | **Candidate should have** |
| **Semester** | **passed in following** | **completed the term and** |
|  | **examinations** | **filled examination form and shall have appeared in examination** |
|  |  |  |
| I Semester | Degree examination as specified in 4(A)(i) | - |
| II Semester | - | Semester – I |

1. Without prejudice to the other provisions of Ordinance No. 6 relating to the Examinations in General, the provisions of Paragraphs 5, 7, 8, 10, 26 and 31 of the said Ordinance shall apply to every collegiate candidate.
2. The fees for the course/ examination shall be as prescribed by the Academic Council from time to time and whenever any change is made in the fees prescribed for any particular examination that shall be notified through a notification for information of the examinees concerned.

|  |  |  |
| --- | --- | --- |
| 7. | ( A ) | The scope of the subjects and pattern of examination shall be as |
|  |  | indicated in Course and Examination Scheme & Syllabus as per Annexure - A |
|  | ( B ) | The Medium of instructions and examinations shall be in ENGLISH only. |
|  |  |  |
|  |  |  |

1. Applicant for PGDIR Examination prosecuting regular course of study shall not be permitted to join any other course in this or any other University.
2. **ASSESSMENT**



The final total assessment of the candidates is made in terms of an Internal assessment (Sessional) and an external assessment for each course as indicated in ANNEXURE-A





The division of the 20 / 10 marks allotted to internal assessment of theory papers is on the basis of written test, seminars, presentations and attendance as determined by the teacher in respective subject and moderated by Head of the Institute/Principal.



An unsuccessful examinee shall be eligible for reexamination on payment of fresh examination fee prescribed by the University as per the respective directions.



The internal marks will be communicated to the University at the end of each semester, but before the semester examinations.



The record of internal marks, evaluation & result should be maintained for a period of one year by respective institute/college for verification by competent authority.



The Maximum and Minimum marks for each subject in PGDIR Semester-I and Semester-II Examination are as indicated in ANNEXURE – A



A copy of Project work / Internship shall be submitted to college prior to commencement of Semester-II Examination for Evaluation by Internal and External Examiner appointed as per University rules.



Candidate shall submit his/her declaration that the Project Work / Internship is a result of his/her own work and the same has not been previously submitted to any examination of this University or any other University.

* The Practical Examination of each Semester will be conducted by Internal and External Examiner appointed as per University rules.
* If an examinee failed to pass the PGDIR Degree within Three Successive Years from the date of his/her First Admission to particular programme he/she shall be declared as **“Not Fit for the Course” (NFC)** and he/she will not be allowed to appear further for any examination of the course.

11. ( a ) There shall be no classification of examinees successful at the PGDIR Semester-I Examination whereas SGPA will be notified.

**\* Conversion of Marks to Grades and Calculations of SGPA (Grade Point Average) and CGPA (Cumulative Grade Point Average):**

In the Credit and Grade Point System, theassessment of individual Course in the concerned examinations will be on the basis of marks only, but the marks shall later be converted into Grades by mechanism given in Table-II wherein the overall performance of the Learners can be reflected after considering the Credit Points for any given course. However, the overall evaluation shall be designated in terms of cumulative Grade point . There are some abbreviations used here that need understanding of each and every parameter involved in grade computation and the evaluation mechanism. The abbreviations and formulae used are as follows:-

*Abbreviations and Formulae Used*

C: Credits

CP: Credit Points

CG: Credits X Grades (Product of Credits & Grades)

G: Grade (Absolute Grade)

GP: Grade Points

The value can be matched with the grade in the Grade Point table as per the Seven (07) Points Grading System and expressed as a single designated GRADE such as O, A, B, etc given in **Table-II**

**Table-II**

|  |  |  |
| --- | --- | --- |
| Marks | Grade | Grade Points |
| 85 and above | O | 10 |
| 75 -84 | A | 9 |
| 65-74 | B | 8 |
| 60-64 | C | 7 |
| 55-59 | D | 6 |
| 50-54 | E | 5 |
| 00-49 | F (Fail) | 0 |

SGPA: Semester Grade Point Average shall be calculated for individual semester.

SGPA = ΣCG: Sum of Product of Credits & Grades points earned of current semester / ΣC: Sum of Credits in current semester

CGPA: Cumulative Grade Point Average shall be calculated for the entire Programme by considering all the semesters taken together.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ( b ) | Division at the PGDIR Semester-II Examination shall be declared | | | | |
|  | on the aggregate credits earned at the PGDIR Semester-I and | | | | |
|  | Semester-II Examination taken together. The CGPA | | | | |
|  | will be calculated as follows and notified. After calculating the SGPA for an individual semester and the CGPA for entire programme as per following formula.    ΣCG Sum of product of Credits and grade points of Sem.I + ΣCG Sum of product of Credits and grade points of Sem-II  CGPA= ---------------------------------------------------------------------  Total No. of credits for Sem-I + Sem-II | | | | | |  |
| ( c ) | Successful examinees at the PGDIR Semester-II Examination shall be | | | | |
|  | awarded division, based on CGPA as follows given in Table-III  **Table-III** | | | | |
|  |  |  |  |  |  |
|  | CGPA Range | | |  | Equivalent Class/ Division |
|  | 5.25 to 6.74 | | |  | Second Division |
|  | 6.75 to 8.24 | | |  | First Division |
|  | 8.25 to 8.99 | | |  | First Division with Distinction |
|  | 9.00 to 10 | | |  | Honors |

(d) For conversion of CGPA to percentage use the formula

% = (CGPA - .75) X 10

1. Successful examinees in the PGDIR Examination shall be awarded Distinction in each subject in which examinees obtain 75% or more marks in that subject at the respective Examination.
2. Unsuccessful examinees at the above examinations can be readmitted to the same examination on payment of a fresh fee and such other fees as may be prescribed.
3. Provisions of Direction 44 of 2001 relating to the award of Grace marks for passing an examination, securing higher division / class and for securing distinction in subject(s) and of Ordinance 10 relating to grant of Exemptions and Compartment vide Ordinance No. 45 of 1983 as amended up-to-date shall apply to the Examinations under this Direction.
4. Notwithstanding anything to the contrary in this Direction, no person shall be admitted to an examination under this Ordinance, if he/ she has already passed the same examination or an equivalent examination of any other University.
5. Examinees successful at PGDIR (Semester-I and II) Examination shall on payment of the prescribed fees receive a Diploma in the prescribed

form signed by the Vice-Chancellor.

1. This scheme shall come into force from the academic session 2015-16.

**Date 20/8/2015**  **Sd/-**

**Dr. S.P. Kane**

**Vice -Chancellor**

**Annexure - A**

**Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur**

**Faculty of Engineering & Technology**

**Course and Examination Scheme of Post Graduate Diploma in Industrial Robotics**

**First Semester**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** |  | **Subject** | **Teaching Scheme** | | | | **Examination Scheme** | | | | | | | | |
|  | **Hours per week** | | | **No. of Credits** | **Theory** | | | | | **Practical** | | | |
| **Hours** | **L** | **T** | **P** | **Duration of Paper (Hrs.)** | **Max. Marks**  **University Assessment** | **Max. Marks**  **College Assessment** | **Total Marks** | **Min. Passing Marks** | **Max. Marks**  **University Assessment** | **Max. Marks**  **College Assesment** | **Total Marks** | **Min. Passing Marks** |
| PGDIR101T | 90 | Introduction to Robotics | 06 | 01 | - | 06 | 03 | 80 | 20 | 100 | 50 | - | - | - | - |
| PGDIR102T | 80 | Sensors, Drives and Actuators | 05 | - | - | 05 | 03 | 80 | 20 | 100 | 50 | - | - | - | - |
| PGDIR102P | 90 | Sensors, Drives and Actuators | -- | - | 06 | 03 | - | - | - | - | -- | 25 | 25 | 50 | 25 |
| PGDIR103T | 80 | Control Systems | 05 | - | -- | 05 | 03 | 80 | 20 | 100 | 50 | - | - | - | - |
| PGDIR104T | 30 | Soft Skills | 01 | 01 | - | 02 | 01 | 30 | 20 | 50 | 25 | - | - | - | - |
| PGDIR105P | 80 | Simulation and Design | - | - | 05 | 05 | - | - | - | - | - | 75 | 75 | 150 | 75 |
| **Total** | **450** | | **17** | **02** | **11** | **26** | **-** | **270** | **80** | **350** | **-** | **100** | **100** | **200** |  |
|  | **Semester Total 30 Hrs** | | | | | **26 Cr** | **Marks 550** | | | | | | | | |

**Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur**

**Faculty of Engineering & Technolog**

**Course and Examination Scheme of Post Graduate Diploma in Industrial Robotics**

**Second Semester**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** |  | **Subject** | **Teaching Scheme** | | | | **Examination Scheme** | | | | | | | | |
|  | **Hours per week** | | | **No. of Credits** | **Theory** | | | | | **Practical** | | | |
| **HR** | **L** | **T** | **P** | **Duration of Paper (Hrs.)** | **Max. Marks**  **University Assessment** | **Max. Marks**  **College Assessment** | **Total Marks** | **Min. Passing Marks** | **Max. Marks**  **University Assessment** | **Max. Marks**  **College Assesment** | **Total Marks** | **Min. Passing Marks** |
| PGDIR201T | 80 | Robot Applications in Industry | 05 | - | - | 05 | 03 | 80 | 20 | 100 | 50 | - | - | - | - |
| PGDIR202T | 70 | Machine vision & Image Processing | 04 | - | - | 04 | 03 | 80 | 20 | 100 | 50 | - | - | - | - |
| PGDIR203T | 50 | Industrial Safety Standards and Quality Standards | 03 | - | - | 03 | 02 | 40 | 10 | 50 | 25 | - | - | - | - |
| PGDIR204P | 80 | Robot Programming Lab. | - | - | 05 | 05 | - | - | - | - | - | 25 | 25 | 50 | 25 |
| PGDIR205P | 70 | Image Processing Lab. | -- | -- | 04 | 02 | - | - | - | - | - | 25 | 25 | 50 | 25 |
| PGDIR206P | 50 | SCADA & HMI LAB. | - | - | 03 | 03 | - | - | - | - | - | 25 | 25 | 50 | 25 |
| PGDIR207P | 60 | Internship | -- | - | 04 | 04 | - | - | - | - | - | 125 | 125 | 250 | 125 |
| **Total** | **460 Hr** | | **12** | **-** | **16** | **-** | **-** | **200** | **50** | **250** | **-** | **200** | **200** | **400** | **-** |
|  | **Semester Total 28 Hours** | | | | | **26 Cr** | **Marks 650** | | | | | | | | |